





22101730267

Med

K25878

34 a. 721

B. Hco
1012.
C. 2.

THIRD EDITION, REVISED AND CORRECTED.

A COMPLETE MANUAL
OF
Electro-Therapeutics,
AND A BRIEF
TREATISE ON ANATOMY AND PHYSIOLOGY.

BY
ELIZABETH J. FRENCH.

ILLUSTRATED.

PHILADELPHIA
J. B. LIPPINCOTT COMPANY.
1886.

14783 770

Copyright, 1886, by ELIZABETH J. FRENCH.

WELLCOME INSTITUTE LIBRARY	
Coll.	welMOmec
Call No.	
	W13



DEDICATED
TO
HUMANITY AND SCIENCE.
BY
THE AUTHOR.

PREFACE TO REVISED EDITION.

BY GEO. W. SNYDER, M.D.

CONVINCED of the truth, and therefore assured of the ultimate prevalence of the principles advocated and maintained, and for many years practised with singular success, by the author of "Electro-Therapeutics," the writer, in common with many others who have had the opportunity and have taken the time to thoroughly acquaint themselves under the tuition of the author with her methods of applying electricity to the cure of disease, and have marked the result, has urged upon her the importance of revising the "New Manual," and giving to her students and to the practitioners of her system the benefit of her extensive experience acquired since the publication of that volume. Only those who know the extent and magnitude of her daily professional work can appreciate the mental and physical tax imposed in the fulfilment of this task.

While she has conscientiously endeavored to make this little volume what its title claims, "A Complete Manual of Electro-Therapeutics," the author does not claim for it infallibility. But whatever other defects the book may have, that it is brief is not regarded as one of them. It is a book of *facts* rather than of *law*,

and these facts are stated in the fewest words compatible with clearness, and for the guidance of those who know the value of the fundamental principles on which they are based.

The anxiety originally felt by the author in giving to the world the "New Manual" and putting herself upon the record as the discoverer of a new and hitherto untried path in pathology and of new methods in treating the "thousand ills that flesh is heir to," is not repeated in issuing the "Revised Edition."

Her faith and her work have been proven in the experience of thousands all over our fair land,—from Maine to Florida, from the fiery gate of the Atlantic to the Golden Gate of the Pacific.

And it is *experience* after all, rather than *theory*, that must determine the value of any therapeutic agent. The most scientific knowledge possible of a disease can give us no hint of the effect of any remedy until experience has demonstrated its value. Theory, that unaided by experience, has given rise to all manner of absurdities in medical practice; caused Cato to recommend *cabbage* as a sovereign remedy in most diseases; and in times past led all the schools to denounce any remedy that neither "sweated, puked, nor purged."

What we most need is positivism in the treatment of disease,—more facts, less theory, and exact clinical observations. The vocation of the true physician is to make them scientific.

The author of this manual possesses the merit of originality in cardinal ideas, distinctive methods, and a system based upon experience; reasoning

from which she has reduced her theories to a science. That experience covers a period of nearly forty years,—in a vast number of cases, in hospital and private practice, in all climates, and under the most varied conditions,—and enables her to speak “as one having authority.”

The measure of success to be attained by others in applying the principles herein laid down to the cure of disease will depend mainly upon the attention given to the *details* of treatment. The careless and indifferent will be disappointed; but the faithful and conscientious practitioner, “whatsoever he doeth, shall prosper.”

G. W. S.

CHICAGO, ILL., October, 1885.

CONTENTS.

PREFACE	5-7
-------------------	-----

PART I.

CHAPTER I.

Human Anatomy and Physiology, 17; Elements of Human Organism, 18; Respiratory Apparatus, 21; Circulation of the Blood, 23; Valves of the Heart, 25; Systemic Circulation, 27; Digestive System, 28; Salivary Glands, 29; the Stomach, 30; Alimentary Canal, 31; the Liver, 32; Lacteal and Thoracic Duets, 33.

CHAPTER II.

The Brain and Nervous System, 34; Life Principle, 35; Gray's Nerve-Force, 36; Human Battery, 38; Brain Matter, 40; Medulla Oblongata, 43; Cranial Nerves, 45; Spinal Nerves, 47; Sympathetic System, 49; Review, 51.

CHAPTER III.

Organs of Generation, 53; the Ovaries, 55; the Genito-Urinary Organs, 57.

CHAPTER IV.

Anatomical and Physiological Illustrations, 58; Base of Brain, 59; Section of the Brain, 60; Pneumogastric Nerve, 61; Spinal Cord, 62; Sympathetic Nerve, 64; Sympathetic Nerve, according to Gray's Anatomy, 66; Trachea, Lungs, and Heart, 67; Distribution of the Eighth Pair of Nerves, 68; Front View of Thorax, 69; Reflection of the Peritoneum, 71; Alimentary Canal, Stomach, Spleen, and Bowels, 72; Section of Kidney, 73; the Uterus and Appendages, 74; the Ovaries, 75; Section of

Female Pelvis, showing Position of Viscera, 76; Male Pelvis and its Contents, 77; Ligaments of Pelvis and Hip-Joint, 78; Female Pelvis, 79; Lymphatics and Laeteals, 80; Temperature of the Human Body—Proportions of Blood—Dimensions of Organs, 81; Dimension and Capacity of Organs, 82; Exudation and Absorption of the Lymphatics, 83; Table of the Cranial Nerves, 85; Table of the Spinal Nerves and Sympathetic Nerves of the Head and Neck, 87; Table of the Spinal Nerves of Upper Limb, 88; Table of the Spinal Nerves in the Abdomen, 89; Table of Sympathetic Nerves of the Abdomen, 90; Pneumogastric Nerve in the Abdomen, 91.

CHAPTER V.

Medical Electricity, 92; Primary and Secondary Currents, 94; Selection of Currents, 97; Administration by Electrodes, 99; Mode of Addressing Treatment, 101; the Vapor-Bath, 102; Caution in Manipulation, 105; Illustrations of Instruments used by the Author, 106; the Combination Batteries, 109; Care of the Battery—To Start the Battery, 112; How to Use a Battery, 113.

PART II.

RATIONALE OF CURE—SPECIFIC TREATMENTS.

	PAGE
Electrical Diagnosis	115
Local Diagnosis—Spinal Diagnosis	116
THE AUTHOR'S DISCOVERY—CRANIAL DIAGNOSIS	117
Difference in Electrical Currents	118
Qualities of the Currents	119
THE SILVER HELIX	120
General Rules	121
General Treatment—Running-off Treatment	123
General Tonic—Scrofulosis—Suspended Animation	124
Shock—Collapse—Chills	125
Congestive Chills	126
Fevers	127
Intermittent—Remittent—Typhoid Fevers	129
Yellow Fever	130
Eruptive Fevers—Scarlet Fever	131
Measles—Catarrhal Fever	132
Rheumatic Fever—Acute Rheumatism	133
Chronic Rheumatism—Lumbago—Myalgia	135
Muscular Rheumatism—Sciatica	135
Numbness and Heaviness of the Legs	136
Cerebro-spinal Meningitis (Spotted Fever)	136
Sleeplessness—Nervousness—Soreness	137
Stupor	138
Headache—Nervous, Gastric, etc.	139
Sick Headache	140
Headache	141
Electric Foot-bath—Foot-bath in Bed—Intemperance	142
Narcotic Poisoning—Chronic Narcotism	143
Poisoned Wounds—Bites of Rabid Animals	144
Mineral and Irritant Poisons	145
Neuralgia—Toothache	146
Hysteria	147
Chorea (St. Vitus's Dance)	148

	PAGE
Convulsions—Epileptic	150
Convulsions—Infantile	151
Convulsions—Puerperal, Hydrophobia, Tetanus	152
Prevention of Miscarriage—Labor Assisted	153
Apoplexy—Paralysis	154
Paralysis	157
Myographia (Scrivener's Palsy)	158
Local Congestions, Inflammations, and Allied Diseases	159
Inflammation of the Brain	159
Affections of the Eyes	160
Disordered Vision—Weak Eyes—Conjunctivitis	160
Lachrymal Obstructions	161
Otitis (Earache)—Gathering in the Ear	161
Deafness—Nasal Catarrh	162
Nasal Polypus—Bleeding of the Nose	163
Tonsillitis—Pharyngitis	164
Sore Throat—Diphtheria	164
Whooping-cough—Mumps	165
Goitre	166
Laryngitis—Croup—Hoarseness	167
Tracheitis—Bronchitis—Asthma	168
Influenza—Cold in the Head	169
Phthisis (Consumption)	169
Pneumonia	170
Pleurisy	170
Diseases of the Heart	171
General Circulation	172
Paretic Diaphragm	172
Indigestion—Dyspepsia	173
(<i>The Rocking Motion of Electrode</i>)	173
Morbid Liver—Enlarged Liver	174
Constipation—Piles	175
Colic—Tenesmus—Cramps	175
Diarrhœa and Dysentery	176
Cholera and Cholera Morbus	177
Weak or Sore Kidneys	178
Prolapsed or Floating Kidney	178
Albuminuria—Diabetes	179
Dropsy	180

	PAGE
Incontinence of Urine	181
Cystitis—Metritis—Ovaritis	182
Ulceration of the Genito-Urinary Passages—Rectum, etc. . . .	183
Uterino Displacements	184
Uterino Displacements (Improved Method)	187
Ovarian Weakness	188
Weakness of Uterus and Bladder	188
Weakness of the Bowels	189
Painful Menstruation	189
Suppressed Menstruation	190
Leucorrhœa—Impotence	190
Gonorrhœa—Syphilis	191
Bubo—Hydrocele—Varicocele	192
Varix of the Legs (Varicose Veins)	193
Aneurism	193
Indurations	194
Polypus	194
Tumors	195
Ovarian Tumors	196
Cancers	197
Hemorrhages	198
Erysipelas	199
Furunculus, or Boils—Ulcers—Fistula—Ingrowing Nails—Burns —Run-arounds—Chilblains—Abscesses—Sprains—Carbuncles —Felon	201
Pustula Maligna	203
Cutaneous Diseases	204
Diseases of the Joints, Chronic or Subacute, Sequelæ of Sprains, Rheumatism, etc.	206
Suppuration	207
Morbus Coxarius (Hip-Disease)	207
Curvature of the Spine	208
Instruments and Electrodes referred to in this Work	258

APPENDIX.

	PAGE
SYMPTOMATOLOGY	211
Digestive System	212
Hemorrhage	213
Respiratory System—Tegumentary System	214
Secretory System	215
Motor System—Sensory System	216
Pain in the Head	217
Psychical System—Delirium	218
Modes of Death—Physical Diagnosis	218

DISEASES.

Affections of the Respiratory System	219
Organs of Circulation	222
Organs of Digestion	223
The Liver	227
The Kidneys and Bladder	228
The Brain and Nervous System	230
Hemorrhages	236
Dropsy	237
Zymotic Diseases	238
Fevers	241
Diathesis—Rheumatism—Gout—Scurvy	244
Serofula—Rickets—Caries of Spine—Hip-joint Disease	245
Anæmia—Chlorosis—Pyæmia—Skin Diseases	246
Scaly Diseases of the Skin	247
Tuberculous Diseases of the Skin	248
Parasitic Diseases of the Skin	249
Poison-vine Eruption—Chilblains—Bites of Animals	250
MARSHALL HALL'S READY METHOD IN ASPHYXIA	250
Poisons and their Antidotes	252
Dietetics for the Sick	254

NOTICE.

THIS work can be procured from the author,
ELIZABETH J. FRENCH, or—only upon the presenta-
tion of an order from her—from

J. B. LIPPINCOTT COMPANY, 715 Market Street,
OTTO FLEMMING, 1009 Arch Street,
Philadelphia, Pa.

PRICE, FIVE DOLLARS.

PART I.

CHAPTER I.

HUMAN ANATOMY AND PHYSIOLOGY.

THE author feels it necessary, before proceeding to a consideration of *Electro-Therapeutics*, to give in as comprehensive language as possible the anatomical structure and physiological organism which constitute life and health, or disease, in the human form, herein subsequently to be acted upon.

Assuming that the readers stand in the light of uninformed pupils, the effort on the part of the author will be directed to render as lucid explanations, and to give as wide a range of ideas upon these subjects as possible, without the perplexity of wading through technical nomenclature.

An organism is a body composed of separate parts called organs. It is definite in form and function, and each part or organ is necessary to the full perfection of the whole structure. Unorganized matter, on the contrary, is not necessarily made up of separate parts; it does not consist of organs, nor are the sizes and forms of inorganic masses limited or definite, except in respect to crystalline formations, which

are always definite. Inorganic substances, such as minerals, earths, fluids, gases, etc., may be unlimited in size, and heterogeneous in the shape of their several masses; but plants and animals always assume certain definite shapes and sizes, ranging within certain normal limits. You may break up and divide inorganic bodies into any number of subdivisions, and each part shall retain its identity, and be still the same substance; but you cannot take from an organized body any portion, however minute, without damaging its integrity, and depriving it of an essential part of its structure.

The study of anatomy deals with and describes dead matter. Physiology treats of the powers, motions, and functions of living bodies. Physiology also includes a survey of all animate structures, from the simplest forms of the vegetable to the highest conditions of animal existence; but as the human structure may be regarded as a microcosm, including every form of life below itself, so the study of man is more instructive and comprehensive than all other branches.

The human organism is made up of matter and force: matter, in its three states of solid, fluid, and gaseous; and force, including all the various forms of motion, the sum of which we call life.

The fluids in animal bodies exist chiefly in the form of chyme, chyle, lymph, blood, the different juices secreted by special glands, and water.

The solid portions consist of bone, muscle, cartilage, membrane, adipose, cellular and areolar tissues, nervous matter, hair, teeth, and nails.

The fluids contain in solution all the materials for the formation of solids, and as the fluids and solids are mutually convertible, and constantly interchanging states, their constituent elements do not differ materially from each other.

The following elements are found in more or less variable proportions in the human system : oxygen, hydrogen, nitrogen, carbon, sulphur, phosphorus, silicon, chlorine, fluorine, and iron. There are other elements occasionally found in the body, such as manganese, aluminum, and copper, but these are rather incidental than constant in their presence.

There are, without reckoning the teeth, about two hundred and eight pieces of bone, arranged for the most part in pairs, and grouped symmetrically on either side of the body. The bony structure may be divided into the cranium inclosing the brain; the bones of the face; the trunk, including the sternum, vertebræ, twelve pairs of ribs, the collar-bones and shoulder-blades; and the pelvis, which supports the abdominal regions. The lower extremities consist of the thigh and knee-bones, the legs, feet, and toes. The upper extremities include the arms, hands, and fingers.

The cranium incloses the brain and its appropriate system of blood-vessels, and also bounds the face, organs of special sense, and cranial nerves. The thorax and vertebræ inclose the heart, lungs, blood-vessels, and spinal cord. The pelvic basin supports the stomach, liver, pancreas, spleen, bladder, intestines, and organs of generation. Thus the bony structure performs the important office of protecting,

as in an inclosed lattice-work, the vital organs. There are certain pieces of bone in the pelvis, face, head, and spine which are single and uniform; all the rest are arranged, like the extremities, in pairs, on either side of the body. Each pair of bones differs in some respects from every other pair, and all are fastened together by joints called articulations. The cranium is not formed of one compact mass, but consists of several pieces, firmly united by the interlocking of notched edges, called sutures. The long bones of the extremities are hard, hollow cylinders, lined with membrane, on which blood-vessels are distributed for the nutriment of their substance. The long bones are expanded at the extremities, so as to present surfaces for articulation with other bones. Some of these bones are united by a ball and socket, others by flat surfaces, but all are firmly bound together by muscles and ligaments, and the end of each bone is covered with a layer of cartilage, lubricated by means of a sac of serous membrane, which effuses a peculiar fluid, called synovia, the use of which is to keep the joints moist and supple.

The bones are composed, in the first place, of cartilage, which is converted into osseous tissue by the deposition of phosphate and carbonate of lime. In infancy, cartilaginous or animal matter constitutes the chief portion of the skeleton; in adults, the lime increases, hardening the bones, and communicating strength to the frame; in old age, however, the animal matter dissipates so rapidly that the bones become exceedingly brittle,—hence it is that fractures

to persons in advanced life are so dangerous and difficult to repair.

Without entering into the minutiae of detail which belongs to the anatomy of the bones, it is enough to call attention to the beautiful mechanism of which the frame-work is composed, the position it occupies in the human economy, and to note how admirably the finest principles of mechanics are carried out in the articulation of the several joints, and the freedom with which every part of the structure moves.

The respiratory apparatus commences with the mouth, which conducts the inhaled air through the trachea (windpipe) into the lungs. The trachea is a strong, highly elastic tube, composed of muscular, fibrous, and mucous membranes, all of which line and connect about eighteen cartilaginous rings, the contractile action of which is admirably adapted to produce the various inflexions of the voice essential in speaking or singing.

We may here pause to remark that all portions of the viscera or internal organs that are exposed to the air are lined with mucous membrane, and all the internal organs themselves are inclosed in sacs of serous membrane, the office of which is to secrete a watery fluid, called serum. It is by the effusion of serum that the various organs are lubricated, and any undue irritation, from their friction one upon the other, is avoided.

The trachea terminates, as it enters the thorax, in two arches, called bronchi, and these, dividing off into the right and the left lung, subdivide and ramify into an immense system of tubing, every fibre of which

ends in a minute air-cell. The tissue of the lungs is composed of fine areolar membrane, air-cells, bronchial tubing, arteries, veins, and capillaries. The air-cells are composed of microscopic sacs of membrane. The bronchial tubes, veins, arteries, and capillaries of the lungs are all attenuated to the utmost degree of fineness, and so profusely distributed that the entire mass of the lungs may be said to consist of an immense surface of membrane, with blood-vessels on one side and air-cells on the other. The blood and air do not come into contact, although the fine and permeable character of the membrane permits the nutritive quality of the blood to pass into and nourish the air-cells, and the vitalizing properties of the inhaled air to act upon and change materially the character of the blood. It has been estimated that there are at least six hundred millions of air-cells in the lungs, each one of which is supplied by an artery communicating with a vein, and inflated by the air inhaled in the act of inspiration. The surface presented by the membrane of the lungs would, it is supposed, cover more than thirty times that of the whole body, and the capacity for inflating this light, spongy tissue is provided for, first, by the elastic intercostal muscles which connect the ribs together and expand with every respiration, and next by the action of the large muscular membrane called the diaphragm, which separates the thorax from the abdomen, and alternately curves upward and downward with the actions of inspiration and exhalation performed by the lungs. The chief function of the respiratory organs is that of aerating the blood,

which is carried into the lung-tissues by the pulmonary artery from the right ventricle of the heart. At this point the blood is finally collected by the veins from all portions of the system, and, being charged with the impurities and effete matters, gathered up in traversing the body, presents the appearance of a dark purple, almost black, fluid, when poured through the right vena cava or large vein into the heart. By the exposure of the venous blood to the oxygen of the atmosphere inhaled through the lungs, its impurities are in part disengaged and given off in the form of carbonic acid gas; the whole mass of blood, or nearly the whole, becomes changed in tone and color; the dark purple hue is converted into a bright scarlet, and by the time the pulmonary circulation is completed, the blood is arterialized and poured back into the heart through the left auricle, in a condition sufficiently renovated to form pabulum for the support and nourishment of the entire system.

We must now trace in more detail the circulatory process, and note the intimate connection and interdependence which it maintains with the respiratory system. The heart is the centre of the circulatory apparatus, and it is situated in the thorax, between the right and left lungs. The point or apex slants forward toward the left lung, on which it slightly impinges, the base or broad part inclining backward and upward toward the right shoulder. Although the formation of muscular fibre is uniform in all parts of the system, the closely-knit and strongly-packed fibres of the heart constitute it the

most powerful muscle of the whole body. It is protected from friction against other organs by a smooth serous membrane or sac containing cardial fluid, and this sac is spread over the whole surface of the heart, and so doubled on itself as to form a close bag, called the pericardium, or heart-case.

The heart itself is divided internally in the direction of its length into two halves, which, though so closely connected as to form one, constitute it in reality a double organ. Each part being called upon to perform different functions from the other, the walls of each side differ in thickness in proportion to their uses. Thus, the right side (the office of which is simply to receive the blood and propel it with moderate force into the lungs) exhibits muscular walls less thick, and valves less elaborately fashioned, than the left, through which the blood is received from the lungs, and propelled by the aortal artery through the whole body.

There are four principal cavities in the heart, the first two of which are termed auricles, one situated on each side, right and left, though not exactly uniform; and two other cavities termed ventricles, similarly located, though less uniform even than the auricles. The auricles perform the part of receivers, the ventricles that of propellers.

Between each cavity there is a beautifully constructed valve, the duty of which is to permit the flow of blood in one direction, but to prevent its return again through the same orifice.

The auricle on the right side is furnished with a three-pointed valve, called tricuspid, and that on the

left with a two-pointed valve, termed bicuspid. Both these membranes are attached to the walls of the heart by little muscular cords, and though they appear to be merely finely attenuated threads, they are fashioned, like the valves, with an extraordinary amount of strength and resisting power.

Besides the auricular valves, there are two sets communicating between the ventricles and the arteries. These are termed semilunar valves, and their office is to afford passage from the ventricles to the arteries; the right ventricle forcing the blood into the pulmonary artery, and from thence through the lungs, and the left ventricle by the great aorta throughout the whole body.

In order to gain a correct idea of the course in which the tidal currents of the blood are projected, it is necessary to have a starting-point; and this we shall find by commencing to trace the circuit from the left ventricle. Remember always that the blood does not flow in regular channels through the heart, but that it is propelled by a strong impulse through each valve into its separate cavity. In the left ventricle we find the blood in that bright scarlet condition peculiar to the arterial flow. If we should pierce a vein in any part of the living structure, we would observe a moderate but by no means impulsive flow of the contained fluid; but if we should sever an artery, a violent upward rush of the blood would testify to the momentum with which the current had been impelled. This impulse is originated by the muscular contraction peculiar to the left ventricular cavity, which forces the blood with im-

mense power through the large arterial tube crowning the broad base of the heart, called the aorta. Directly after receiving the first flow of the arterial fluid, the aorta divides like an arch to the right and left, and again subdivides into four main trunks,—two branches of which extend upward, when they are called the carotid arteries, and supply the different portions of the throat and head; the other two trunks tend downward, and branch off on either side of the body into a complex system of tubing, ending in an inextricable net-work of fine hair-like passages called capillaries. The ramifications of this extensive system of vessels are supposed to extend to a length of several miles, and it is thus that arterial blood is furnished to the body, supplying the entire system with nutrition and the life-giving oxygen inhaled through the lungs.

In the capillaries, the blood parts with its nutritive qualities, and from thence it is taken up by the veins, the extent and ramifications of which correspond in all respects with the arteries, only that its dark purple hue denotes the absence of the vitalizing element found in the arteries; but it must be remembered that the chief office of the veins is to carry the blood back again to the great central reservoir of circulatory power in the heart. This they effect by being distributed side by side with the arteries,—intersecting them in thousands of yards of fine hair-like tubing, until they expand into larger proportions, and finally concentrate into four main trunks about the heart, corresponding to the position of the arteries. The large trunks which

carry back the venous blood from the heart and throat are called the jugular veins, and the branches which return the blood from the trunk and extremities are termed *venæ cavæ*. Through these the blood is emptied into the right auricle, and from thence through the tricuspid valve into the right ventricle. Here what is called the great systemic circulation ends, and here the pulmonary or lesser circulation commences. It must be remembered that we started on our analysis by tracing the blood from the left ventricle, but before it can reach this point there must intervene that complete pulmonary circuit through the lungs to which we have previously called attention. The object of this lesser system of circulation is, as before stated, to expose the blood to the oxygen inhaled by the act of respiration, and thus to effect that radical change which converts the dark venous flow into the healthful and vitalizing condition of arterial blood.

The wonders of the circulatory system, and the effects of health or disease which result from a thorough understanding of its influence, cannot of course be fully appreciated from the condensed description which is herewith presented. It is enough to say, however, that if, as the best informed physiologists allow, a single grain of poison infused into any given portion of the organism will traverse the whole circulatory extent of tubing in something less than three minutes of time, what an array of poisonous elements are we not perpetually introducing into our systems, in the shape of vitiated airs, fermented liquors, and injurious articles of food, by

the ignorant and unphysiological modes in which nine-tenths of the community pass their lives!

We now add a brief sketch of the methods by which food is prepared for the nourishment of the system through the digestive apparatus.

The organs of digestion commence with the teeth, and include the mouth, salivary glands, œsophagus or food-pipe, the stomach, duodenum or entrance to the small intestine, the pancreas, liver, gall-bladder, and lacteals.

The three kinds of teeth found in the human jaw are called incisors, canine, and molars. The first of these are designed simply to divide the food, the second to tear it, and the third to bruise or grind it. There are two sets of teeth, namely, the milk-teeth, which supply the gums of infancy and childhood, and the permanent teeth, which take the place of the others from about the age of six to eight years.

The extreme hardness, diverse fashion, and separate offices performed by the three varieties of teeth fastened into the human jaw, taken in connection with similarly diverse functions performed by other portions of the digestive apparatus, demonstrate that the food designed to sustain man should be of a mixed character, and should include animal, vegetable, and cereal productions.

Besides the act of mastication another important process takes place in the mouth, and this consists of insalivation, or the moistening and preparing the food for swallowing by the mixture of saliva. This fluid is secreted from three different sets of glands: one pair situated just below each ear, and called the

parotid glands; another pair placed beneath the tongue, called sublingual; and the third, or submaxillary, placed near the angles of the lower jaw.

The fluids secreted from these three sets of glands differ in character, but in combination form saliva. A certain portion of saliva is always found in the mouth, except its flow is restrained by disease, but, like the gastric juice of the stomach, the moment food is presented to the mouth the flow is greatly increased, and this sometimes occurs even when the thought of food excites the nerves which supply the salivary glands. This result is what is vulgarly called "setting the mouth watering" at the sight or mention of desirable food. After the food has been duly masticated and moistened by the saliva, it is collected by the muscles of the cheeks and the action of the tongue, and conveyed against the back part or veil of the palate, which is so hung as to close the cavity of the mouth in rest, yet in swallowing to open it freely and permit the passage of the food into the pharynx.

The œsophagus is an elastic muscular tube resembling the trachea in construction, inclosed on its external surface by a serous membrane; then follows a layer of thick elastic muscular membrane, the whole being lined with mucous membrane.

By the muscular contractions of the œsophagus, the food is next forced through an orifice near the heart, surrounded with a strong band, or sphincter, into the main digestive cavity, or stomach.

The human stomach is an oblong membranous bag, situated just below the diaphragm, and placed

somewhat obliquely across the abdomen. It has two orifices: the one just alluded to, namely, the cardiac orifice, by which the food is received, and the other at its smaller extremity, called the pyloric orifice, the office of which is to convey the semi-digested food from the stomach into the intestines. Both these orifices are surrounded with muscular bands, which close upon the interior sac, and only open or expand when it is essential to receive or to expel the food from the cavity of the stomach.

The stomach has three coats, consisting of an external covering, or serous membrane; a muscular or middle coating, formed of highly elastic muscular fibre, the property of which is to contract and expand, and thus promote the rolling motion occurring whilst the food is being digested in the stomach; and an inner lining, called, as before stated, the mucous membrane, the office of which is not only to cover the interior surface with a smooth slimy fluid, but also to contain the countless number of little follicles or glands through which the gastric juices are poured out and secreted; in fact, the surface of the mucous membrane or inner lining of the stomach is pierced with little glands and processes so thickly set that millions of them may be counted under the microscope. When this organ contains no food these glands are at rest, but directly food is introduced into the cardiac orifice, the follicles pour out an acrid fluid secreted within them, which, running down into the contents of the stomach, so dissolves and changes them that all matters susceptible of digestion become converted into a pulpy mass called chyme.

Nothing but solid matter, and that of an organic nature, is acted upon by the gastric fluid. Liquids are at once got rid of, and when introduced into the stomach in large quantities, materially interfere with the process of digestion. Solid tissues, such as cooked meat, fish, and bread, are most readily dissolved by the gastric juices. Saccharine and starchy matters are ejected in an unchanged state into the small intestines. Gastric fluid, though poured in large quantities into the stomach during the process of digestion, does not remain there, nor is it all absorbed by the food; some portions of it are reabsorbed into the capillaries which surround and overlay the glands, and thus pass into the general circulation, and perform the function of nourishing or vitiating the tissues of the body; but the greater portion of the solids, when they are susceptible of being dissolved by the gastric juices, are carried off through the pyloric orifice into the duodenum, or first part of the alimentary canal.

The usual length of the small intestine in man is about twenty-five feet. The opening then widens into a much larger passage, called the colon, or great intestine, the length of which, for about five feet, is traversed by the waste matter, which is finally ejected from the system. The intestines, like the stomach, have three coats or membranes, consisting of the peritoneal or serous, the muscular, and the mucous.

The surface of the mucous lining of the small intestine is even more numerously studded with small glands, called villi, than the stomach. Through these

villi the nutritive portions of the food are absorbed by a set of vessels called lacteals, but not until the chyme, or half-digested food, has been further prepared by a juice, secreted by a long gland situated on the right side of the stomach, called the pancreas. This gland pours out a fluid called the pancreatic juice, and its peculiar property seems to be to mix with and prepare the fatty matters taken into the system for general distribution.

The final act of the digestive process is performed by the liver. This is a large gland, divided into several lobes, pierced thickly with blood-vessels, and having a circulation of its own, called the portal circulation.

One of the chief offices of the liver is to secrete or manufacture a bitter, acrid fluid, called bile. This is poured out into a small duct, adhering to the lower side of the liver, called the gall-bladder. There is a duct which leads direct from the liver into the gall-bladder, and from this again into the small intestine, at or about the same point as the pancreatic duct, and this is called the bile-duct. Through this passage the biliary fluid is poured in a given quantity into the small intestine, changing so materially the character of the chyme, that after it has passed beyond the pancreatic and bile ducts it is converted into a white, milk-like fluid; in fact, it now assumes that rudimental condition of which blood is formed, and, having undergone its last change in the act of digestion, it is called chyle, and is taken up as already stated by absorption through the mucous membrane of the small intestine into a set of vessels termed

lacteals, and from thence it is poured into the general circulation through the blood-vessels.

Whatever residue matter there may be, including that not fit for nutriment, is forced on into the colon, and as the lining membrane in this intestine is no longer supplied with nutritive glands, the contained matter becomes hard and comparatively dry, and is expelled in regular course from the system by the excrementary passage.

It now only remains to add a few words of description concerning the lacteals, through which the thoroughly digested food is ultimately converted into chyle and poured into the general circulation.

The lacteals form part of an extensive fluid system, called lymphatics, of which that portion termed lacteals originates in the mucous membrane of the alimentary canal. Here they are imbedded in the form of villi, or minute tubules, imperceptible to the naked eye; and the chyle, or digested food, in its liquid, milky state, is absorbed into these villi, from whence it passes into larger passages, uniting into great branches, and finally combining into one trunk, called the thoracic duct.

Into this main passage all the lymphatics and lacteals are emptied. Its situation is in front of the second lower joint of the spine, or lumbar vertebræ, and after continuing up the backbone until it reaches a valvular opening, just beneath the clavicle, or collar-bone, it discharges its contents into the left subclavian vein, becomes commingled with the returning currents of venous blood, and is carried into the right cavity of the heart, to be lost in the general circulation.

CHAPTER II.

THE BRAIN AND NERVOUS SYSTEM.

UNDER the microscope the diameter of blood-disks is one four-thousandth part of an inch !

Hundreds of millions of air-sacs in the lungs, miles of tubing in the blood-vessels and capillaries, and millions of cells occupied in forming the brain ; phrases, these, which, however true, bring no sense of realization to the mind seeking to learn the grand machinery of life, except to those familiar with the dissecting-room, or conversant with works devoted exclusively to the delineation of anatomy and physiology.

Therefore, in this volume, all minutiae of description which applies to the original formation of tissues is withheld, and the simple statement is given that all the different portions of the body, whether bone, muscle, membrane, cartilage, or nervous matter, are constructed from minute cells, the primary form of which is a sac of membrane of infinitesimal attenuation and nuclei of microscopic size.

Millions of these, flattened, elongated, rounded, or pressed into spheroids, go to make up a single fibre of muscular or nervous matter. Bundles of fibres, countless in multitude, are bound together to form a mass of tissue ; whilst the human body includes the totality of all tissues, organs, systems, and apparatuses.

Passing forward then to the grand results of formation, we are now about to enter upon that peculiar system of organic life which connects the realms of matter and force, and in part reveals the causation underlying the variety of motions which make up the life-principle.

When we turn from the dead body, which is in reality inorganic matter, and contemplate the immense variety of powers and functions manifest in the living structure itself, it becomes impossible to narrow down our investigations to the inert masses examined by anatomy; hence we must push into the avenues opened up by physiology.

To determine the source of those marvellous activities which proceed with such regular order in life, and to ascertain what element it is, the absence of which stills those activities into death, and reduces their instrument of expression to inert matter, has been the problem of ages, and one which even now would not have been susceptible of solution if a partial disclosure of the mystery had not been made by the researches of physiologists, and the light which modern science has thrown upon the powers and functions of the nervous system, under the stimulus of *Electricity*.

For some time past the theory has been advanced, that the hidden and mysterious forces of life were generated by the brain and nervous system in what is termed "*nerve aura*," and that this element would account for all the phenomena vaguely attributed to a "*vital principle*."

The simple fact that the nerves, like the rest of

the organs, perish at death, and that their tissues retain none of the properties assumed to belong to them except they are acted upon from without, is a sufficient refutation of the fallacy that the "*vital principle*" and "*nerve aura*" are one and the same element; but when we find a force which produces upon the organism the effects which we attribute to the "*vital principle*," when we find that force capable of moving the muscles, stimulating the circulation, promoting digestion and respiration, and acting even upon the nervous system itself, are we not justified in assuming that such force is one and the same with the "*vital principle*"? We have a sufficient array of phenomena, through whatever media we observe the action of electricity, to determine that it is the true motor of vital force, and that the physiologist who carefully observes its working as a therapeutic agent, and the anatomist who watches its effects even upon dead matter, have plausible reason to assume that they approach a solution of the problem of life.

Mr. St. Clair Gray published in 1872 a paper upon the origin of nerve-force, which he illustrated by what he considers to be a newly discovered source of natural electricity. During some of his experiments he prepared a cell or cup, containing a solution of caustic potash, in which sticks of phosphorus and sulphur were placed; within half an hour the sulphur was apparently unaffected, the phosphorus was reduced to an oily mass at the bottom of the cell. After a time, it was ascertained that several salts of potassium occurred in the solution, and that

the sulphur at the point of contact with the phosphorus sustained a considerable loss of substance. Similar conditions being found at the end of three months, the phosphorus still fluid, and the sulphur having a continued waste, the amount of electricity generated was tested by Thomson's electrometer, and the electric motive force was 162° , in comparison with a Daniell cell, which only gave 120° ; the difference was 42° in favor of the new cell. The constancy of this original battery was shown by its continuing to work steadily after the expiration of several months.

Mr. Gray proceeds from these hints to suggest a new hypothesis in regard to nerve-force; and starting with the assumption that nerve-power has in it an electric element, he endeavored to ascertain its source, which, after elaborate experiment, he believes can be found in the sulphur and phosphorus of the human body: the brain contains considerable phosphorus, whilst sulphur exists in the liver, and an alkaline solution is circulated between them. He took a frog, and having secured anæsthesia by application of chloroform, an incision was made through the abdominal walls in the right hypochondriac region; and a copper wire passed into the substance of the liver. The eyeball was then pierced, and a similar piece of copper wire brought in contact with the brain by passing it through the optic foramen. The free extremities of the copper wires were brought in contact with the exposed sciatic nerve of another frog's hind leg, when powerful convulsions were immediately induced in the muscles.

Mr. Gray evolved from these experiments the opinion that at least a portion of this electric current is generated by the action of the alkaline fluid on the sulphur and phosphorus contained in the liver and brain. Although the living body is known to have other sources of electricity, Mr. Gray believes that the prime agent in *nervo-motor* power is derived from the reaction of the brain and liver, especially in view of the fact that the kidneys excrete about 72 grains per diem of phosphoric acid, and of sulphuric acid nearly 100 grains are produced per diem, chiefly from the brain and liver.

Mr. Gray also advances the idea—which the author has every reason to corroborate, and has frequently declared in part explanation of her own discovery of *Electrical Cranial Diagnosis*—namely, that the sympathetic nerve, with its branches and ganglia, is not a separate or isolated system, but merely a constituent part of the general nervous system, having the function of regulating the movements of involuntary muscular fibre, and obtaining its nerve-force from the brain. He suggests an arrangement similar to that of the Leyden-jar, as occurring in the membranes inclosing the viscera, the lungs, the heart, and the great serous cavities of the body; whereas the author in a former volume has written, “I would liken the human organism not to a magnet, which has been done so often, but to a great natural battery, of which the lungs are the magnets, generating the electricity for the whole organism; the nerves, the wires or conductors; the heart, the helix or intensifying factor; the head and feet corresponding

to the positive and negative poles. Conceive that the lungs generate the fluid from the oxygen of the atmosphere, and we have a never-failing electric reservoir, in which the slightest perturbation in the current produces, as is well known, a corresponding disturbance in the electric condition of the body; and as the electric forces resident in the various organs of the human body are simply modifications of those which vitalize human nature at large, it follows that any excess or diminution in their quantity, or any impoverishment in quality, may be supplied by a judicious administration of induced electricity. It is upon this basis the author's system of Electro-Therapeutics operates. Her theory of the electric force in its connection with the human organism recognizes it as the motor-power of the life principle."

Not to anticipate in this place the arguments which can be presented to support this theory, we will proceed to briefly consider the structure of the brain and nervous system, and see thereby how far we are justified in assuming that, in their operation, we find the instrumentalities through which the life-forces act.

It has long been believed that consciousness, intelligence, and will, find in the nervous matter of the brain the seat of those properties by which mind acts upon matter. As a full analysis of all that might be advanced in reference to the subtle links which connect mind and matter would involve psychological, as well as physiological, considerations, we must limit ourselves to the physical relations of our subject, alluding to its psychological connections only

where it is essential to elucidate the influences which mind exercises upon matter in different conditions of health and disease.

In the nervous apparatus of man we find two well-marked and distinct systems,—the cerebro-spinal, and the sympathetic or ganglionic system. The cerebro-spinal consists of the brain, the spinal cord, and the nerves, which extend these great centres to the ultimate extremities of the body.

The brain is composed of a soft, pulpy tissue, and is inclosed in the cavity formed by the cranium. The mass of the brain is divided into two principal portions, called the cerebrum, or front brain, and the cerebellum, or back brain.

The cerebrum occupies all the anterior and upper part of the cranial cavity; it also extends to the posterior region of the head, covering the upper portion of the cerebellum, and resting on the membranes which divide the two. It is seven-eighths larger than the cerebellum, and is supposed to be the principal seat of the intellectual faculties.

The mass of the cerebrum is divided into two hemispheres or lateral halves, and again, these have three prominences on either side, called lobes. The lobes are the special masses which fill the concave portion of the skull at the forehead, temples, and back of the head.

The hemispheres are divided by a double fold of membrane, which dips down between them, and cuts the cerebrum into two distinct halves. There are transverse bands of nervous matter connecting these hemispheres, called commissures, and the last and

largest of these is situated at the base of the cerebrum, forming a strong band of nerve-fibres, called the corpus-callosum. Toward the base of the cerebrum it becomes inflected inward, then expands, and forms an intricate cavity, with several chambers, called ventricles.

The surface of the cerebrum is folded up into an immense number of convolutions, which pierce deeply into the substance, and form a complete mass of fissures and eminences. Brain-matter, although uniform in consistence, presents two striking varieties of color, and a specialty in the arrangement of its surfaces. The external surface is composed of a thick layer of nervous matter of a gray color, called, from its ash-like hue, cineritious; and this dips down into all the convolutions, piercing the internal mass in a well-defined, though exceedingly irregular, layer.

This interior mass is of a milky-white substance, semi-fluid in consistence, and is called medullary. Notwithstanding the irregularity of surface occasioned by the convoluted nature of the cineritious layer, it does not commingle with the medullary, but the gray and white substances preserve their distinct positions throughout the whole mass. The brain is more abundantly supplied with blood than any other organ of the body; but if the extent of brain-surface were limited by the size of the mass, only one-tenth of the quantity of blood would be sent to the brain that it now receives; and the additional provision for its nutrition is derived from the blood-vessels spread out on the membranes, and piercing all the convolutions into which the mass is folded.

There are three membranes inclosing the brain. The external is a strong, firm tissue, lining the cranial cavity, and adhering closely to the bones; it also dips down between the two hemispheres, and, being reflected back over either side, forms the double fold which divides them. This membrane is called the *dura mater*, or "hard mother," from the belief of the old anatomists that it originated all the strong membranes of the body.

The second membrane is called the *arachnoid*, or "spider-web," from its exceeding attenuation. This membrane dips into all the convolutions, and upon its surface is spread out the extensive vascular system which supplies the brain with blood.

The third and inner membrane is an exceedingly fine and delicate investiture which incloses all the brain-matter, and is termed *pia mater*, or "soft mother," in contradistinction to the *dura mater*.

Myriads of minute vessels are spread out between these membranes, besides which there is a serous fluid secreted by the *arachnoid*, serving the same lubricating purpose as that effected by the serous sacs which inclose the heart, lungs, and other internal organs. All these membranes, in the same order as they exist in the cranium, form the tubular sheath which invests the spinal cord.

The cerebellum, or back brain, is situated at the base of the cerebrum, or front brain, and is in part covered by it. In structure, as in functions, it differs from the cerebrum, its surface being furrowed with lines or ridges instead of convolutions. Like the cerebrum, it is divided into two hemispheres, sepa-

rated by folds of membrane, and united by commissures, or transverse bands of nervous matter. The gray and white matters are arranged in layers similar to the cerebrum; but it is a curious feature in the cerebellum, that when a vertical section of the mass is cut into and solidified by being frozen or otherwise, the white matter is found in the form of a well-defined tree, called from this appearance the *arbor vitæ*, or tree of life.

At the upper part of the spinal column is a singular bulb-shaped mass of white matter, called the medulla oblongata. It is situated immediately beneath the corpus callosum, between the right and left hemispheres of the cerebellum, and forms the point of union between the brain and spinal cord, although it properly belongs to the latter.

Its functions in the nervous system are complicated and important, so that anatomists assign it a very prominent position in the distribution of nerve-force.

Figs. 1 and 2, illustrating the brain, will give some idea of the divisions and subdivisions into which it is resolved; suffice to mention four, the functions of which are far more important than their diminutive size would seem to portend. The medulla oblongata is divided into two halves, like the spinal cord, and although these are transversed and united by bands of nerve-fibres, the functions of these columns are obviously different.

The anterior half of the medulla is the gate through which all the powers of motion are transmitted to the nerves throughout the body.

The posterior half of the medulla oblongata per-

forms the same office for the sensory nerves; in fact, whatever powers originate in the brain must be transmitted through the medulla oblongata; and in reflex action, whatever sensations are transmitted to the brain must in like manner pass through this singular little mass of nervous matter.

The medulla oblongata is also subdivided laterally, so that two distinct centres of sensation are found to exist in the posterior half, and two corresponding centres of motion in the anterior column. Experiments show that if one of the anterior columns of the medulla oblongata is cut away the power of motion in the opposite half of the body is lost, although in the other half motion will remain, and sensation is unimpaired; remove the other half of the anterior column, and all motion ceases. The same results to the powers of sensation are obtained by cutting away the posterior columns separately or together.

Experiments made on living animals have shown that although successive portions of the brain may be cut away until it is all removed, so long as the medulla oblongata remains uninjured the functions of breathing, deglutition, and the automatic processes of life still go on undisturbed.

A very slight wound at the centre of the medulla oblongata is sufficient to produce death, and the functions of motion and sensation are, as we have shown, absolutely dependent on its integrity and perfectness.

Many physiologists assume that the instinctive powers of animal life are centred in the cerebellum; but whilst that organ is undoubtedly essential to

govern and co-ordinate the instinctive powers, the much smaller mass of medulla oblongata is evidently the chief centre of the powers themselves, and without its preservation, motion, sensation, and even life itself cease to animate the organism.

There are twelve pairs of nerves given off from the brain, and from thence to the organs of special sense, and different portions of the head.

The first pair are called the olfactory nerves, and terminate in the inner portions of the nose.

The second pair are called the optic nerves, and supply the retina of the eye.

The third, fourth, fifth, and sixth pairs are also distributed about the eyes; the third, fourth, and sixth pairs being motor nerves.

The fifth pair, called trifacial, are sensory, and send off branches which supply the cheeks, nose, and mouth.

The seventh pair are the general motor nerves of the facial muscles.

The eighth pair, called auditory nerves, end in the interior of the eye.

The ninth pair supply the back of the mouth and pharynx.

The tenth pair, the important pneumogastric nerves, originating in the medulla oblongata, communicate with the lungs, heart, and stomach, and ramify through the entire viscera to a considerable extent. (See Fig. 3.)

The eleventh pair supply the muscles of the neck.

The twelfth pair communicate with the tongue and the organs of speech.

The two pairs, eleventh and twelfth, are called

spinal accessory and hyoglossal; but physiologists are not in general agreed upon the classification and names of the cranial nerves.

The nerves are mostly cells, or tubules, composed of membranous sacs or sheaths, lined with nervous matter, inclosing nerve-filaments in the form of bundles, which stretch away, divide, and subdivide, but never lose the original quality of sensation or motion which they derive from their roots. In every membranous sheath there are two distinct sets of filaments, one of which communicates with the cerebral hemispheres, and the other with the spinal cord.

The spinal cord is a long, irregular column of nerve-substance, inclosed in a sheath, composed of the cranial membranes prolonged down the spine. It extends from the medulla oblongata to the second lumbar vertebra of the spine. (See Fig. 4.)

The spinal cord, although composed of gray and white nervous matter like the brain, presents a different arrangement of the layers,—the white matter being on the exterior, and the gray or eineritious mass forming a band which traverses the interior of the column.

Like the medulla oblongata, the spinal cord is divided into two symmetrical halves, united in the middle by a commissure, or converging lines of nerve-fibre; it is also separated into an anterior and posterior column by a vertical fissure. Each lateral half is traversed by two longitudinal tracts, which separate it by distinct furrows. Thus there are on either side three well-marked columns, called the anterior, posterior, and lateral.

The spinal cord is enlarged at the neck and loins, and from these expansions are given off the nerves which supply the upper and lower extremities.

From the spinal cord are given off thirty-two pairs of nerves, the roots of which spring from either side of the cord, right and left.

The first eight pairs arise in the region of the neck, and are called *Cervical*.

The next twelve pairs, corresponding to the number of the ribs, are termed *Dorsal*.

Then five pairs, which spring from the lumbar vertebræ.

The remaining six pairs originate in the vertebral bones, which divide the basin of the pelvis and supply the lower abdominal regions.

Every nerve-trunk arises from a distinct root, and these roots originate in pairs, one in the anterior and the other in the posterior half of the column.

The nerves which spring from the posterior half are nerves of sensation; those from the anterior division of the cord, motor nerves. Like the columns of the medulla oblongata, if one of the sensory nerves be divided at any portion of its length, the ultimate point which it supplies becomes destitute of sensation. A corresponding effect is produced by dividing a motor nerve: the muscle or joint with which it communicates will never more move, and that result follows notwithstanding that the brain and spinal cord may remain in their perfect integrity.

To cut or sever a cord itself in any portion of its length is paralysis of both motion and sensation in all those parts of the body supplied by the nerves

arising below the point of injury ; in fact, it is manifest that the stupendous powers of motion and sensation find their instrumentalities in these little insignificant-looking nerve-filaments ; sever, wound, or injure them, and paralysis of motion, or sensation, is just as inevitably the result as if the columns of the medulla oblongata were cut away as before described.

The nerves arise, as we have said, in pairs ; a nerve of motion and sensation in one-half of the column, and corresponding roots springing from the other half,—the sensory nerve-roots arising from the posterior division, the motor nerve-roots from the anterior.

These pairs arise at first singly, but they soon after combine into a ganglionic knot, again to divide and subdivide and ramify into countless fibrous lengths, supplying every part of the body, reaching to the ultimate points of the spine, the interior of the bones, muscles, membranes, tissues, and blood-vessels : in fact, it is impossible to conceive any portion of the organism which is not supplied with some ramification, great or small, from the main trunks of the cerebro-spinal system.

It must be noted that nervous action is invariably dual or reflex : for example, the cerebrum wills to move a joint or contract a muscle ; the thought is immediately telegraphed through the medulla oblongata to the desired point, and whatever sensation is produced by that motion is instantaneously telegraphed back again to the brain by the corresponding nerve of *the pair*. Of course there are a vast number of motions going on in the system which proceed wholly independent of volition. Many of these arise

under the influence of the pneumogastric and spinal accessory nerves, also from the ganglionic or sympathetic system, the nerves of which supply the functions of organic life; but whatever motions are produced under the influence of nerve-action, are telegraphed back to the brain by reflex action.

When the organism is in health, the motions that proceed in the various departments of organic life are so mechanically perfect, that they produce no other sensation than a generally exhilarating realization of life; but when, on the contrary, there is a lack of *equilibrium* in the organism, and torpidity or excessive action ensues, the result is disease, and the announcement of its presence is telegraphed to the brain in the sensation called pain.

Possibly it may be argued against this position, that the ganglionic nerves (the system which supplies the viscera, and is profusely distributed about the head and trunk) are neither sensory nor motor, hence that those portions of the organism supplied by the sympathetic system do not convey to the brain the sensations of pain.

To fully comprehend the working of this complex scheme of nervous action, we must consider the nature and origin of the ganglionic or sympathetic system, and its connection with the cerebro-spinal nerves. (See Fig. 5.)

The sympathetic system consists of a double chain of nervous ganglia, running along the front and sides of the spinal column, and connected with each other by slender longitudinal filaments. Each ganglion is reinforced by a motor and a sensitive filament, de-

rived from the cerebro-spinal system, and thus the organs supplied by the sympathetic nerves are brought directly into communication with the brain, which is kept informed of all the influences operating on the various organs supplied by the sympathetics. The nerves of this system are distributed to the heart, liver, spleen, kidneys, intestines, generative organs, head, neck, lungs, and blood-vessels.

The whole organism abounds in ganglia, which form plexuses of glands and nerves, and completely overlay the organs which they supply. Masses of sympathetic ganglia abound in the abdominal regions, the largest of which, from its numerous inosculations, has been named the *solar plexus*; but the entire system communicates, first with each ramification of its own system, next with the cerebro-spinal system, and finally with all the internal viscera.

Notwithstanding the connections between the two systems are preserved throughout the body, they are nevertheless much scattered; and as the sensory and motor nerves do not penetrate into the internal portions of the organism, where the sympathetics most abound, it follows that the telegraphic communications which the latter send off to the brain must proceed more slowly, as they act through a secondary system. It is for this reason that the parts of the body immediately under the influence of the cerebro-spinal nerves are more sensitive to pain than those supplied by the sympathetics. The sensations travel more slowly, and the motions, being purely instinctive, do not report themselves to the brain as directly as those operating immediately under the

influence of the will. Still, they are reported, and it is by this intimate connection between the two systems that the brain is kept informed of all that is transpiring in the body—of all its states and conditions—and that without the fatigue and wear which would ensue if every motion were immediately under the influence of the will.

In the foregoing brief summary of the action of the two systems of nerves, their mutual relations to each other, and the intelligence resident in the brain, we may clearly understand how the skilful physician is enabled to interpret the nerve-language which assumes the tone of pain; and the only marvel is that the experience and observation of more than two thousand years of medical practice have not been sufficient to reduce sympathetic indications to a far more exact status than that which they at present occupy.

At this juncture let us review the functions of the brain and nervous systems.

First. The cerebrum is obviously the seat of consciousness. Structureless and insignificant as may appear the matter of this grand cranial instrument, considered in its physiological workings it is the seat of consciousness.

Second. The cerebellum is the governing organ, which controls and directs in harmonious combinations all the purely instinctive motions of the system, and enables the will, emanating from cerebral influences, to put designs into execution.

Third. The medulla oblongata keeps the gate through which the mandates of the mind pass forth,

and the obedient responses of the muscles, or the complaints of any diseased organs inform the consciousness of their condition.

Fourth. The cerebro-spinal nerves, with their dual functions of motion and sensation, provoke the muscles to act, and report faithfully back to the brain the sensations which all such actions have produced.

Fifth. The pneumogastric and spinal accessory nerves, together with the whole array of the sympathetic system, pierce into the dark and hidden places removed from the exercise of the will; but still they cannot escape from the duty of reporting their condition upon the little fibres of the cerebro-spinal system with which they are connected, and this again sounds the alarm in the tones of pain through the cerebral hemispheres, where it reports itself, with the accompanying demand upon the physician's art to restore the equilibrium which any suffering organ has lost.

The nervous fluid is compared by many authoritative writers to ELECTRIC ACTION. The author makes this claim, and thereupon bases her system of Electro-Therapeutics. Moreover, claiming that the nervous system makes a correct record of all diseases, and all the conditions under which the organism is or may be laboring, she asserts that it can locate and disclose the *exact* extent of the degeneration which has beset hidden organs, internal tissues, or tumors imbedded in secret places; making a chart upon the brain, which the author's discovery of Electro-Cranial Diagnosis can delineate if properly addressed by intelligent and informed practitioners.

CHAPTER III.

ORGANS OF GENERATION.

THE pelvis, or basin, situated in the adult about the middle of the body, is, as before stated, a large bony cavity, open above and below, and contains a portion of the intestines and the urinary and genital organs; serving as well for the strong points of articulations of the lower limbs, the attachment of their muscles, and the accomplishment of their movements. It is composed of four flat, broad, unequally thick bones, which are different in shape, size, and association, touching and articulated at some part of their surface, and closely united by extensions of muscular fibres or ligamentous fasciæ.

The pelvis supports the vertebral column behind, and is sustained in front by the ossa femorum, or thigh bone.

The sacrum and coccyx form the median line of the junction of the posterior pelvic bones, and the two anterior bones are united before and at the sides—called ilio. (See Figs. 15 and 16.)

The chief office of the pelvis seems to be, in the female, the protection of the fœtus, and the parts inservient to reproduction.

The organs of reproduction, differing in the male and female, bear a singular resemblance in the pecu-

liar affections to which they are susceptible, and have compensative parts, as will be hereafter explained.

In the female the parts of generation are complicated. Those inservient to copulation are the vulva and vagina; others to conception, and the protection of the fœtus for a determined time, as the uterus, situated between the bladder and rectum. The uterus is flattened on the front surface, and is nearly an inch in thickness; it is two inches broad at the fundus, or base, and becomes narrower towards the vagina, and is called at its termination the cervix or neck, to distinguish it from the rest of the organ, called the body—*corpus uteri*. At the point where the body of the uterus is continuous below with the neck, it is constricted, forming the internal orifice. (See Fig. 13.)

The appendages of the uterus are six in number,—i.e., two Fallopian tubes, the two ovaries, and the two round ligaments. These structures, nerves, blood-vessels, and some muscular fibres are inclosed in two folds of the peritoneum, which constitutes the broad ligaments. Their position is as follows: in front are the round ligaments; the Fallopian tubes occupy the free margin of the broad ligaments; the ovaries and their ligaments are behind and below the Fallopian tubes. (See Fig. 12, No. 1.)

The Fallopian tubes convey the ova from the ovaries to the cavity of the uterus, situated in the free margin of the broad ligaments, extending from each superior angle of the uterus to the sides of the pelvis. The length of each tube is about four inches; the aperture or canal is exceedingly minute; com-

mencing at the connection with the uterus, it gradually widens and terminates in a bell-like orifice with a series of fringe-like processes termed fimbriæ, one of which is connected with the outer end of the ovary, as may be seen in Fig. 12, No. 1.

The ovaries are oval-shaped, elongated bodies, one on each side of the uterus, in the back part of the broad ligament, under and back of the Fallopian tubes.

The ovaries are connected to the uterus by ligaments, associated with their inner extremity; and at the outer extremity, to the above-mentioned fimbriated extremity of the Fallopian tubes by a short cord or ligament; in the posterior part to the broad ligament.

Each of the ovaries is about an inch and a half in length, and three-quarters of an inch in width, and about one-third of an inch thick—their weight from one to two drachms. Imbedded in the tissue of the internal surface of the ovaries are the Graafian vesicles, containing the ova. The fluid contained in these vesicles is albuminous, and holds the ovum. The Graafian vesicles gradually moving, work out to the surface of the ovaries, burst, and liberate the fluid and ova, passing into the Fallopian tubes; the fimbriated extremities are supposed to grasp the ovaries, and hence the mature ova are conducted through the tube into the Fallopian tubes, and conveyed to the uterus, and at regular periods are eliminated from the uterus, producing menstruation, unless the ovum is fecundated. (Fig. 12, No. 2.)

The two round ligaments of the uterus are two

round cords, composed of tissue, nerves, vessels, and fibres, between four and five inches long, situated below and in front of the Fallopian tubes, between layers of the broad ligaments. They commence on each side at the superior angle of the uterus, pass forward through the internal abdominal ring, along the inguinal canal, to the labia majora, or lips of the vulva.

The menstrual flow is a kind of capillary discharge, and is supplied, according to authorized physiologists, from the uterine mucous membrane, and is the consequence, and, at the same time, the natural termination of the periodical congestion of the accessory parts.—*Vide* Dalton's Physiology.

The peculiar correspondence, and yet marked difference, in the male and female organs of generation, has frequently been commented upon by physiologists. A celebrated writer has avowed that the idiosyncrasies of sex bore such strong analogy that the male was only the female turned inside out, for the ovaries and uterus in the female corresponded to the testes and prostate glands in the male (see Fig. 14); and so the author has found in this system of Electro-Therapeutics, that the peculiar abdominal weight, caused from overstrained ligaments holding the genito-urinary organs in position, was to be addressed in a similar way in both sexes: and whereas the male is more subject to prolapse of the bladder than is the female, by reason of the incumbent weight and strain upon the organs, the uterus in the female is the organ for compensative displacements.

The weight and pulling of connective tissues and

deep fascia extending beyond and above the peritoneum, yet a part of such, produce a peculiarly noticeable distressed tone of depression in the voice, and the unmistakable lassitude in both sexes, when any displacement or pressure exists in the genito-urinary organs; hence the importance in these organs for health, and that the ligaments and muscles be firm and unrelaxed.

Many of the weakening difficulties which drain the vitality of both sexes are of the same nature, and must be treated in similar manner. For instance, leucorrhœa in the female and seminal emissions from the male bear so strong an analogy they should meet with the same constitutional treatments in both sexes.

CHAPTER IV.

ANATOMICAL AND PHYSIOLOGICAL ILLUSTRATIONS.

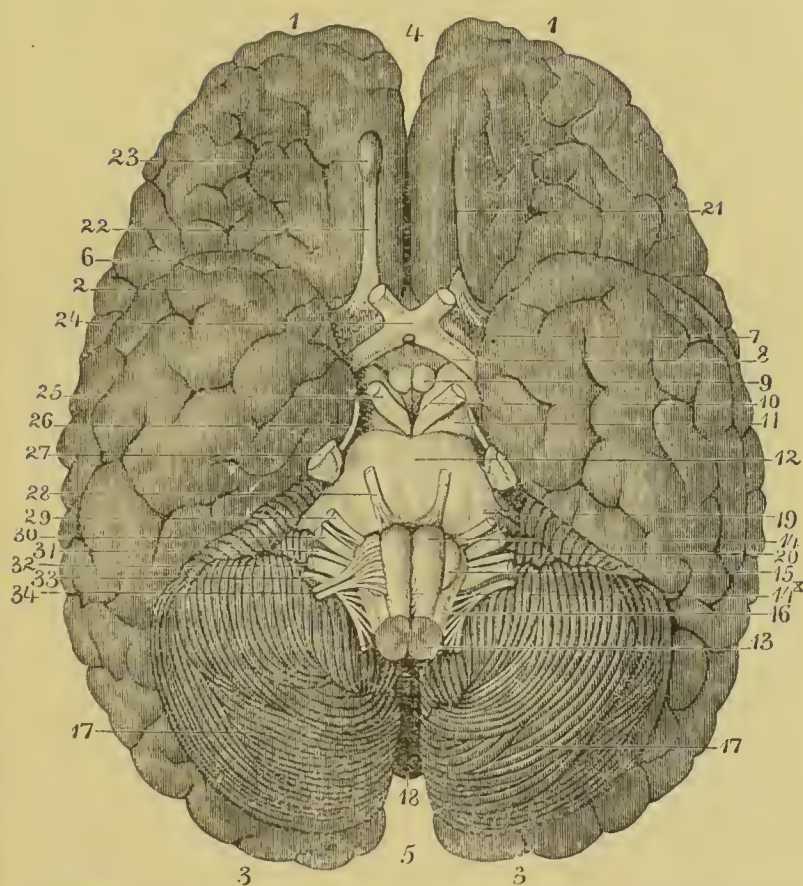
THE purpose of this chapter is merely to illustrate such organs, and circulatory, nervous, and other systems as are especially and peculiarly dealt with by the author in her method of Electro-Therapeutics.

To her publishers, also to Dr. John Dalton's and Dr. Henry Gray's publisher, Mr. Henry C. Lea, the author has occasion to extend thanks for their courtesy in allowing copies from the engravings in their respective works upon Human Physiology and Human Anatomy.

* To those seeking a fuller knowledge, the works upon anatomy and physiology of Gray and Dalton are highly commended as explicit and authoritative.

BASE OF BRAIN.

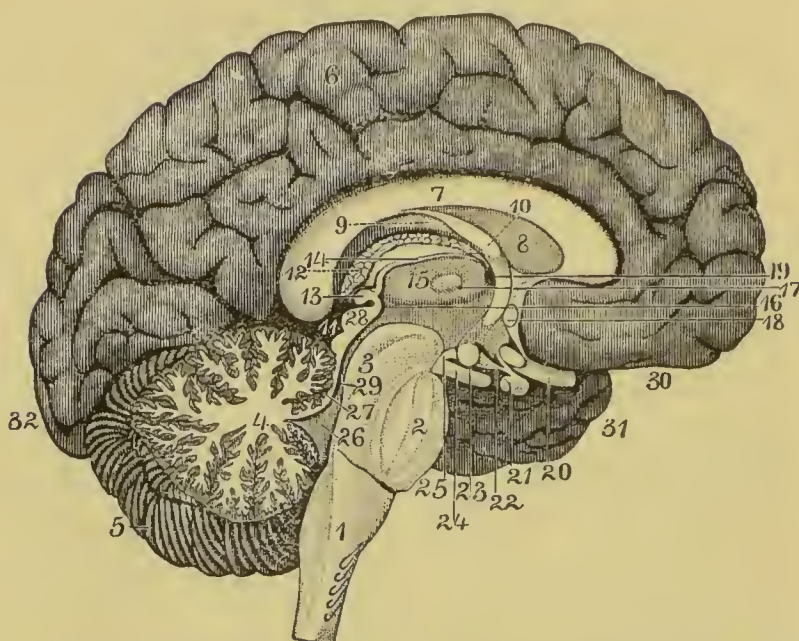
FIG. 1.



- | | |
|---|---|
| 1. Anterior lobes of the cerebrum. | of the fissure separating the latter. |
| 2. Middle lobes. 3. Posterior lobes. | 19. Crus of the cerebellum. |
| 4, 5. Anterior and posterior extremities of the great longitudinal fissure. | 20. Pneumogastric lobule of the cerebellum. |
| 6. Sylvian fissure. | 21. Fissure which accommodates the olfactory nerve, 22. |
| 7. Anterior perforated space. | 23. Bulb of the olfactory nerve. |
| 8. Infundibulum. | 24. Optic commissure |
| 9. Mammillary eminences. | 25. Oculo-motor nerve. |
| 10. Posterior perforated space. | 26. Pathetic nerve. |
| 11. Crura of the cerebrum. | 27. Trifacial nerve. |
| 12. Pons. 13. Medulla oblongata. | 28. Abducent nerve. |
| 14. Pyramidal bodies. | 29. Facial nerve. 30. Auditory nerve. |
| 14*. Decussation of the pyramids. | 31. Glosso-pharyngeal nerve. |
| 15. Olivary body. | 32. Pneumogastric nerve. |
| 16. Restiform body. | 33. Accessory nerve. |
| 17. Hemispheres of the cerebellum. | 34. Hypoglossal nerve. |
| 18. Vermiform process at the bottom | |

SECTION OF THE BRAIN ALONG THE GREAT LONGI- TUDINAL FISSURE.

FIG. 2.



- | | |
|---|--|
| 1. Medulla oblongata. | 15. Rests on the thalamus within the third ventricle. |
| 2. Pons. | 16. Posterior commissure of the latter. |
| 3. Crus of the cerebrum. | 17. Middle commissure. |
| 4. Arborescent appearance in section of the fundamental portion of the cerebellum. | 18. Anterior commissure. |
| 5. Left hemisphere of the cerebellum. | 19. Foramen of communication between the third and lateral ventricles. |
| 6. Inner surface of the left hemisphere of the cerebrum. | 20. Optic nerve. |
| 7. Corpus callosum. | 21. Pituitary body. |
| 8. Pellucid septum. | 22. Infundibulum. |
| 9. Fornix. | 23. Mammillary eminence. |
| 10. Anterior crus of the fornix descending to join the corresponding mammillary eminence. | 24. Oculo-motor nerve. |
| 11. Fissure through which the interposed velum (12) is introduced into the third ventricle. | 25. Posterior perforated space. |
| 12. Pincal gland. | 26. Fourth ventricle. |
| 13. Its peduncle. | 27. Valve of the brain. |
| | 28. Quadrigeminal body. |
| | 29. Entrance from the third to the fourth ventricle. |
| | 30, 31, 32. Anterior, middle, and posterior lobes of the cerebrum. |

PNEUMOGASTRIC NERVE WITH ITS PRINCIPAL
BRANCHES.

1. Pharyngeal branch.
2. Superior laryngeal branch.
3. Inferior laryngeal.
4. Pulmonary branches.
5. Stomach.
6. Liver.

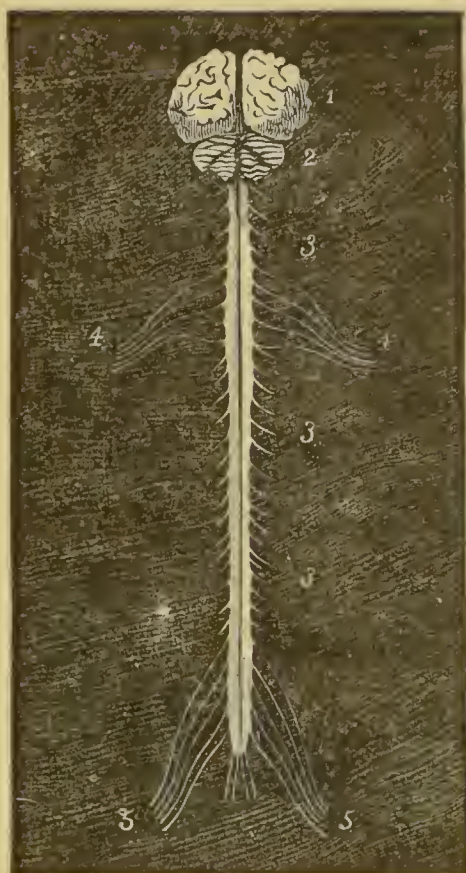
FIG. 3.



Although this great nerve—at its origin sensitive—when ramified into its tributaries is considered extremely dull and comparatively non-sensitive, it contributes in its distribution of nervous force to both muscular coats and mucous membranes of the organs to which it relates. Its origin in the middle of the back portion of the medulla oblongata, and its direct distribution to four vital organs,—namely, the heart, lungs, stomach, and liver,—render it important.

CEREBRO-SPINAL SYSTEM OF MAN.

FIG. 4.



1. Cerebrum.
2. Cerebellum.
3. } Spinal cord
3. } and nerves.
4. } Brachial nerves.
5. } Sacral nerves.

The spinal cord is cylindrical, and running from one end of the spinal canal to the other, and connected at its anterior extremity with the ganglia of the brain, it is divided, by an anterior and posterior median fissure, into two lateral halves, which still remain connected with each other by a central mass or commissure.

Its inner portions are occupied by a gray matter, which forms a continuous ganglionic chain, running from one extremity of the cord to the other; its outer portions are composed of white substance, the filaments of which run for the most part in a longitudinal direction, connecting the different parts of the

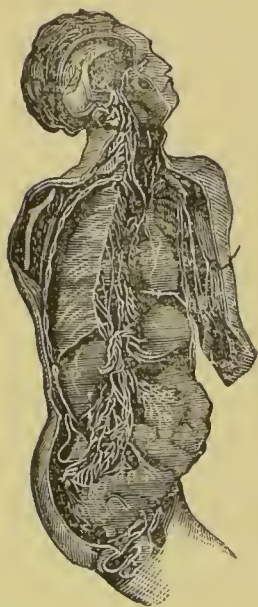
cord with each other, and the cord itself with the ganglia of the brain.

The pairs of nerves given off from the spinal cord are larger where the nerves are distributed to the arms and legs; for instance, the cervical nerves which supply the arms, and the sacral nerves which supply the legs, are larger than the dorsal and lumbar nerves. By examination of Fig. 4, the philosophy of placing the electricity on the cervical vertebra to affect the arms and shoulders can be comprehended. Moreover; considering that the cerebro-spinal system, consisting as it does of a series of ganglia sending out nerves to the corresponding parts of the body and the spinal cord, supplies the integument and muscles of neck, trunk, and extremities with the ganglia of the brain, besides supplying the corresponding parts of the head, presiding over the organs of the special sense, and performing various other functions of purely nervous character; the fact that the author's system of Electro-Therapeutics is so frequently addressed to the basilar region, and down the length of the vertebral column, as the base upon which to work out a cure, is possessed of fundamental soundness, and evolved from purely physiological laws.

SYMPATHETIC NERVE.

According to Dalton's Human Physiology, the sympathetic nerve is distributed to organs over which the consciousness and will

FIG. 5—No. 1.



have no immediate control. It serves as a medium of reflex action between the sensitive and motor part of the digestive, excretory, and generative apparatuses; and it is certain that it also takes part in the reflex actions in which the cerebro-spinal system is at the same time interested. There are, accordingly, three different kinds of reflex action taking place wholly or partially through the sympathetic system, which may be observed in the living body.

1. Reflex actions taking place from the internal organs through the sympathetic and cerebro-spinal systems, to the voluntary muscles and sensitive surfaces. The convulsions of young children are often owing to irritation of indigested food in the intestinal canal. Attacks of indigestion are also known to produce temporary amaurosis, double lesion, strabismus, and even hemiplegia. Nausea and a diminished or capricious appetite are often prominent symptoms of early pregnancy, induced by the peculiar condition of the uterine mucous membrance.

2. Reflex action taking place from the sensitive surfaces, through the cerebro-spinal and sympathetic systems, to the involuntary muscles and secreting organs. Imprudent exposure of the integument to cold and wet will often induce diarrhœa. Mental and moral impressions, conveyed through the spinal senses, will affect the motions of the heart and disturb the processes of digestion and secretion. Terror, or an absorbing interest of any kind, will produce a dilatation of the pupil, and communicate in this way a peculiarly wild and unusual expression to the eye. Disagreeable sights, odors, or even unpleasant occurrences, are capable of hastening or arresting the menstrual discharge, or of inducing premature delivery.

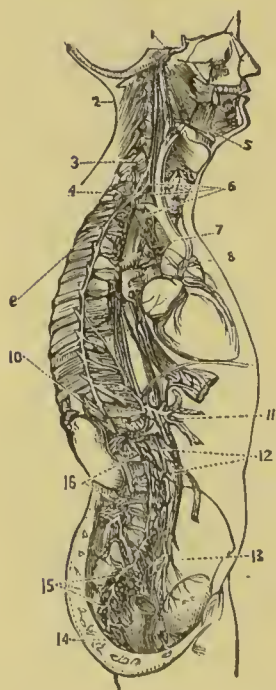
3. Reflex actions taking place through the sympathetic system, from one part of the internal organs to another. The contact of food with the mucous membrane of the small intestine excites a peristaltic movement of the muscular coat. The mutual action of digestive, urinary, and internal generative organs upon each other takes place through the medium of the sympathetic ganglia and their nerves. The variations of the capillary circulation in different abdominal viscera, corresponding with the state of activity or repose of their associate organs, are to be referred to a similar nervous influence. These phenomena are not accompanied by any consciousness on the part of the individual, nor by any apparent intervention of the cerebro-spinal system.

The author here must subjoin that the co-operation and sympathy existent between these great sympa-

thetic, ganglionic, and cerebro-spinal systems—in fact, the totality of forces and nervous intelligences making man—has rendered her discovery of cranial diagnosis but a translation of causes, whose effects the physiologists have often attested but never heretofore explained. However, the author cannot refrain from again expressing her gratitude that Dalton and others have rendered the path so clear by their delineation of revealed nature in their exhaustive works.

SYMPATHETIC NERVE, ACCORDING TO GRAY'S
ANATOMY

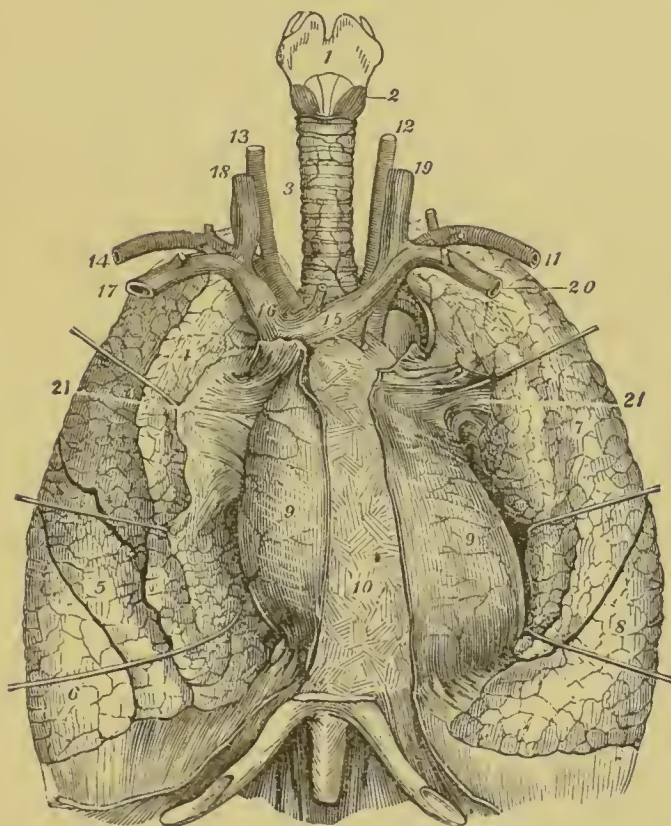
FIG. 5—No. 2.



1. Carotid plexus.
2. Superior cervical ganglion.
3. Middle cervical ganglion.
4. Inferior cervical ganglion.
5. Pharyngeal branches.
6. Cardiac branches.
7. Deep cardiac plexus.
8. Superficial cardiac plexus.
9. Dorsal ganglia.
10. Dorsal ganglia.
11. Solar plexus.
12. Aortic plexus.
13. Hypogastric plexus.
14. Inferior hypogastric.
15. Sacral ganglia.
16. Lumbar ganglia.

FRONT VIEW OF THE TRACHEA, LUNGS, AND HEART.

FIG. 6.



1. Larynx.
2. Crico-thyroid muscle.
3. Trachea.
- 4, 5, 6. Upper, middle, and lower lobes of the right lung.
- 7, 8. Upper and lower lobes of the left lung; the anterior part of both lungs is drawn aside by hooks so as to expose to view (9) the heart contained within its pericardium.
10. Anterior mediastinal space, the line on each side indicating the position at which the pleuræ are

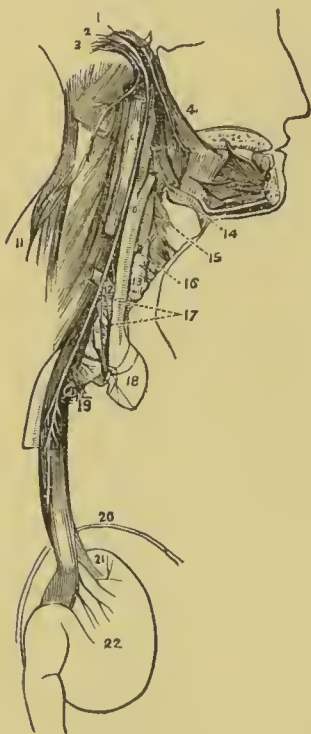
reflected from the pericardium to the front wall of the thorax.

11. Left subclavian artery.
12. Left common carotid.
13. Right common carotid.
14. Right subclavian.
15. Left innominate vein.
16. Right innominate vein.
- 17, 18. Left subclavian and internal jugular veins.
- 19, 20. Right internal jugular and subclavian veins.
21. Root of the lung.

THE EIGHTH PAIR OF NERVES.

Course of distribution of the eighth pair of nerves,—*i.e.*, glosso-pharyngeal, pneumogastric, and spinal accessory.

FIG. 7.

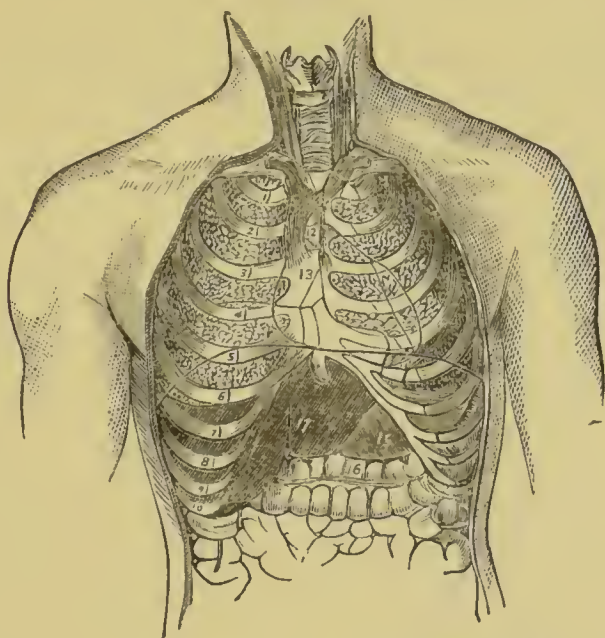


1. Glosso-pharyngeal.
2. Pneumogastric.
3. Spinal accessory.
4. Stylo-glossus.
5. Sterno-mastoid.
6. Jugular vein.
7. Internal carotid.
8. Stylo-pharyngeal.
9. Hyoglossus.
10. Common carotid.
11. Trapezius.
12. Subclavian.
13. Thyroid body.
14. Super-laryngeal.
15. External laryngeal.
16. Inferior laryngeal.
17. Cardiac.
18. Arch of the aorta.
19. Pulmonary branches.
20. Diaphragm.
21. Left pneumogastric.
22. Anterior surface of stomach.

FRONT VIEW OF THE THORAX.

The thorax is bounded in front by the sternum, the six upper costal cartilages, the ribs, and intercostal muscles; at the sides, by the ribs and intercostal muscles; and behind, by the same structures and the dorsal portion of the vertebral column.

FIG. 8.



- | | | | |
|-----|---|-----|-------------------|
| 1. | } True, or sternum ribs. | 11. | Superior cava. |
| 2. | | 12. | Aorta. |
| 3. | | 13. | Right auricle. |
| 4. | | 15. | Stomach. |
| 5. | | 16. | Transverse colon. |
| 6. | | 17. | Liver. |
| 7. | } Three false, or short ribs.
Two floating ribs. | | |
| 8. | | | |
| 9. | | | |
| 10. | | | |

The thorax is a conical framework, formed partly of bones, and partly of the soft tissues by which they

are connected together. It is supported, and its back part is formed by the middle, or dorsal, region of the spine. It is narrow above, broad below, flattened before and behind, and somewhat cordiform on a transverse section.

The superior opening of the thorax is bounded on each side by the first rib; in front, by the upper border of the sternum; and behind, by the first dorsal vertebra. It is broader from side to side than from before backward; and its direction is backward and upward.

The lower opening, or base, is bounded in front by the ensiform cartilage; behind, by the last dorsal vertebra; and on each side of the last rib, the diaphragm fills the intervening space. Its direction is obliquely downward and backward, so that the cavity of the thorax is much deeper on the posterior than on the anterior wall. It is wider transversely than from before backward. Its outer surface is convex; but it is more flattened at the centre than at the sides. Its floor is higher on the right than on the left side, corresponding to the upper border of the fifth costal cartilage on the right side; and to the corresponding part of the sixth cartilage on the left side.

The parts which pass through the upper opening of the thorax are, from before backward, the sterno-hyoid and the sterno-thyroid muscles, the remains of the thymus gland, the trachea, œsophagus, thoracic duct, and the longus colli muscles on each side; on the sides, the arteria innominata, the left carotid and left subclavian arteries, the internal mammary and

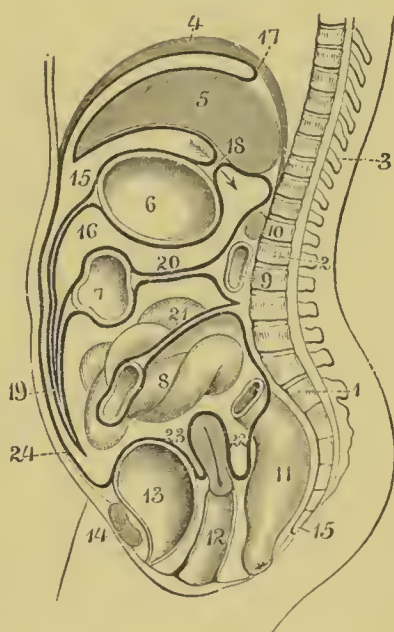
superior intercostal arteries, the right and left venæ innominatæ, and the inferior thyroid veins, the pneumogastric, sympathetic, phrenic, and cardiac nerves, the anterior branch of the first dorsal nerve, and the recurrent laryngeal nerve of the left side. The apex of each lung, covered by the pleura, also projects through this aperture, a little above the margin of the first rib.

The viscera contained in the thorax are: the heart, enclosed in its membranous bag; the pericardium; and the lungs, invested by the pleuræ.

THE REFLECTIONS OF THE PERITONEUM.

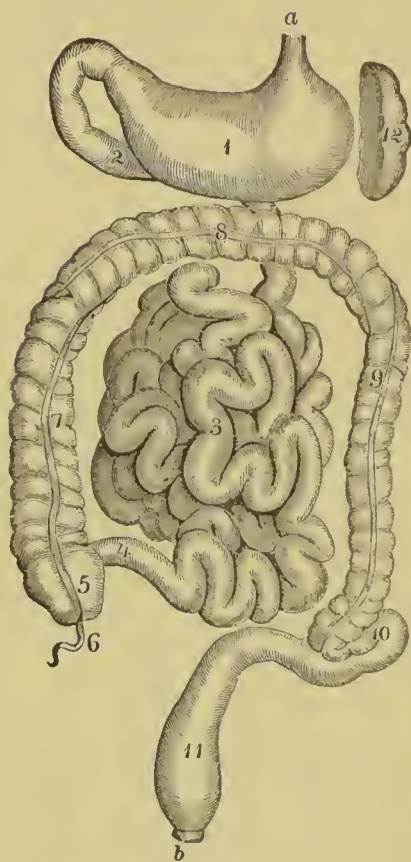
1. Upper segment of the sacrum.
2. First lumbar vertebra.
3. Dorsal vertebrae.
4. Diaphragm.
5. Liver.
6. Stomach.
7. Transverse colon.
8. Small intestine.
9. Duodenum.
10. Pancreas.
11. Rectum.
12. Vagina and uterus.
13. Urinary bladder.
14. Pubis.
15. Greater cavity of the peritoneum.
16. Lesser cavity.
17. Section of a lateral ligament of the liver.
18. Gastro-hepatic omentum: the arrow indicates the communication, at the right border of the latter, of the great and lesser cavities of the peritoneum.
19. Great omentum.
20. Transverse mesocolon.
21. Mesentery.
22. Recto-uterine pouch.
23. Vesico-uterine pouch.
24. Portion of peritoneum lining the anterior wall of the abdomen.

FIG. 9.



ALIMENTARY CANAL, STOMACH, SPLEEN, AND BOWELS.

FIG. 10.



- a. Esophagus.
- 1. Stomach.
- 2. Duodenum.
- 3. Small intestine.
- 4. Termination of the ileum.
- 5. Caecum.
- 6. Vermiform appendix.
- 7. Ascending colon.
- 8. Transverse colon.
- 9. Descending colon.
- 10. Sigmoid flexure of the colon.
- 11. Rectum.
- 12. Spleen.
- b. Anus.

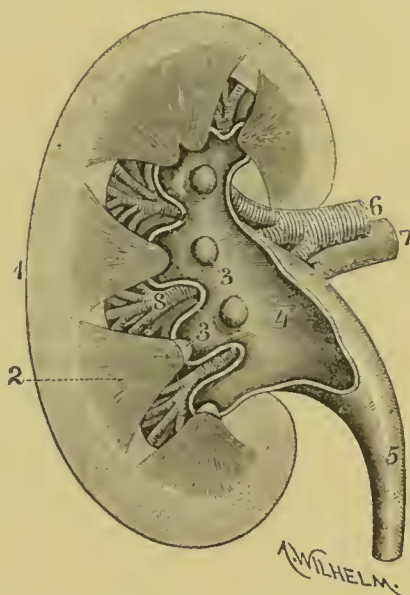
From the tongue to the anus is a consecutive canal with a similar mucous lining. The author has found in states of constipation, where there existed congestion of the alimentary canal, a most efficacious electric treatment by placing the spatula, or tongue-instrument, on the tongue,—positive pole; and an electrode at the anus,—

negative pole. See treatment for Constipation.

LONGITUDINAL SECTION OF A KIDNEY.

FIG. 11.

1. Cortical substance.
2. Renal pyramid.
3. Renal papillæ.
4. Pelvis.
5. Ureter.
6. Renal artery.
7. Renal vein.
8. Branches of the latter vessels in the sinus of the kidney.



The kidneys are two glandular organs deeply situated in the lumbar region; lying one on each side of the vertebral column, the right a little higher than the left. They are opposite the upper two or three lumbar and the last dorsal vertebræ, inclining toward each other above, and are maintained in this position by their vessels, together with a quantity of loose areolar tissue usually containing much fat. Their anterior surface is more convex than the posterior, and their upper extremity is larger than the lower, and has attached to it the supra-renal body.

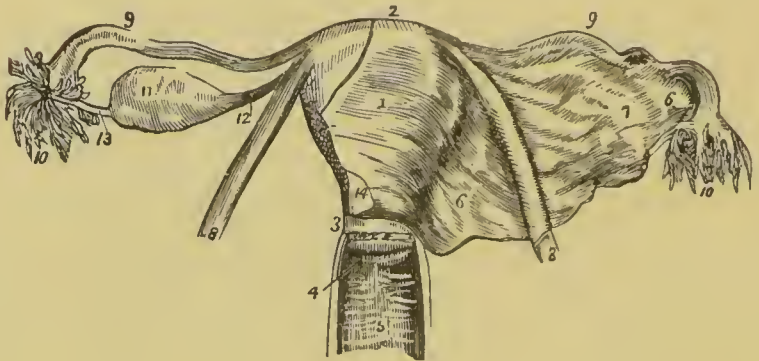
The right kidney in front is in contact with the liver, the descending portion of the duodenum, and the ascending colon; the left with the spleen, pancreas, stomach, and descending colon.

The kidneys are smooth, dark red, compressed oval bodies with a notch on the inner side; the form being so characteristic that similar-shaped bodies are com-

monly called kidney-shaped, or reniform. They vary in size, but ordinarily measure about four inches in length, two inches in breadth, and one inch in thickness, and weigh about four ounces.

THE UTERUS AND APPENDAGES.

FIG. 12—No. 1.

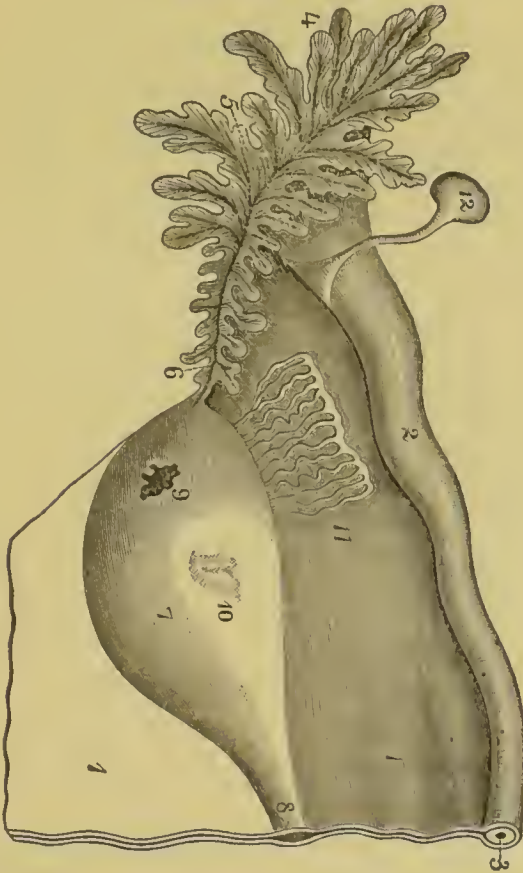


- | | |
|--|---|
| 1. Uterus, with its peritoneal covering partially retained. | 7. Position of the ovary behind the broad ligament. |
| 2. Its fundus. | 8. Round ligament. |
| 3. Its neck, with the fore part of the attachment of the vagina removed. | 9. Oviduct, or Fallopian tube. |
| 4. Mouth of the uterus. | 10. Its fimbriated extremity. |
| 5. Interior of the vagina. | 11. Ovary. |
| 6. Broad ligament, removed on the opposite side. | 12. Ovarian ligament. |
| | 13. Process connecting the fimbriated extremity with the ovary. |
| | 14. Cut border of the broad ligament. |

THE OVARIES.

This cut represents the left ovary, and is about the same size as in the human body.

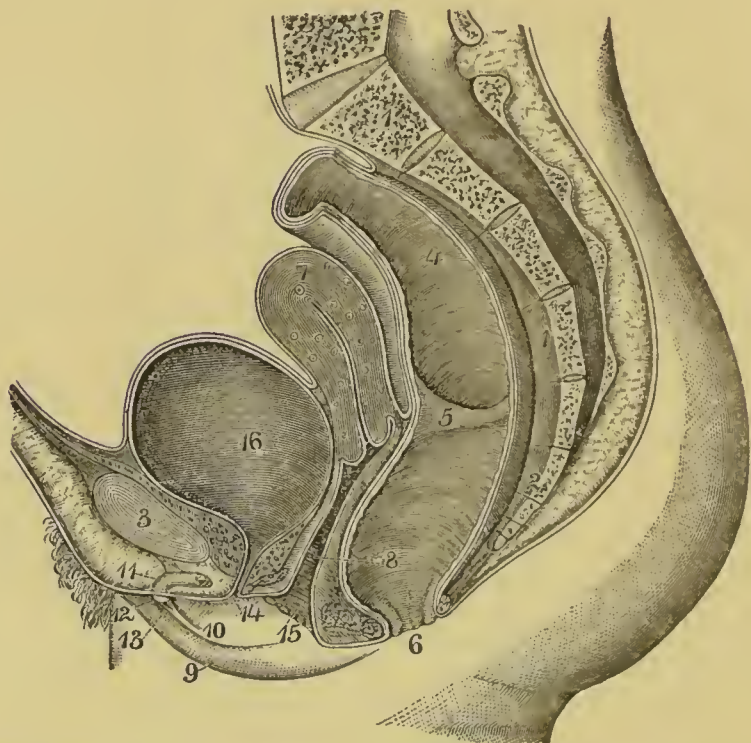
FIG. 12—No. 2.



1. Broad ligament.
2. Fallopian tube, or oviduct.
3. Its canal.
4. Its fimbriated extremity.
5. Mouth of the latter, or pavilion.
6. Process attached to the ovary.
- 7, 8. Ovarian ligament.
9. Orifice from which an ovum recently escaped.
10. A cicatrix.
11. Parovarium.
12. Remains of the duct of Müller.
From a virgin of about eighteen years of age.

SECTION OF FEMALE PELVIS SHOWING POSITION OF VISCERA.

FIG. 13.

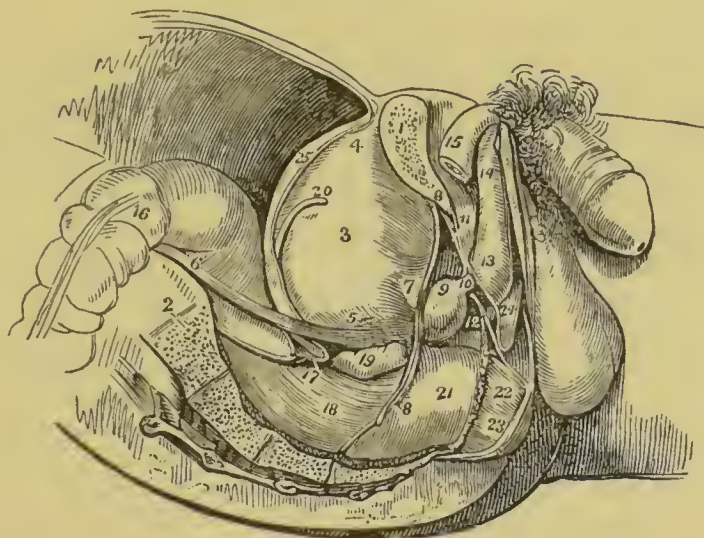


1. Sacrum.
2. Coccyx.
3. Pubic symphysis.
4. Rectum.
5. One of its valvular folds.
6. Anus.
7. Uterus.
8. Vagina.
9. Right labium.

10. Right nympha.
11. Clitoris, attached by the suspensory ligament to the front of the pubic symphysis.
12. Glans.
13. Prepuce.
14. Urethra.
15. Entrance of the vagina.
16. Bladder.

SIDE VIEW OF MALE PELVIS AND ITS CONTENTS.

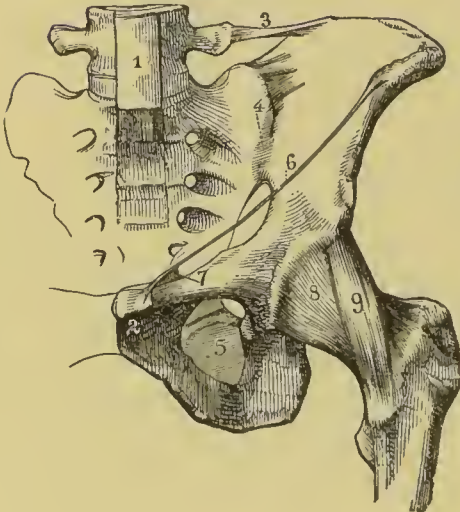
FIG. 14.



1. The right pubis sawed through.
2. Sacrum.
3. Bladder.
4. Its summit.
5. Its fundus.
6. Right ureter.
7. Neck of the bladder.
8. Attachment of the pelvic fascia.
9. Prostate gland.
10. Membranous portion of the urethra.
11. Triangular ligament.
12. Suburethral gland between the two layers of the latter
- 13, 14. Spongy body.
15. Right cavernous body.
16. Sigmoid flexure of colon.
17. Recto-vesical fold of peritoneum.
18. Rectum, with its muscular coat seen.
19. Right seminal vesicle.
20. Spermatic duct.
21. Pelvic fascia descending to the rectum.
22. Anal elevator muscle.
23. Anal sphincter.
24. Union of the superficial perineal fascia with the triangular ligament or deep fascia.
25. Peritoneum passing from the summit of the bladder to the anterior abdominal wall.

LIGAMENTS OF THE PELVIS AND HIP-JOINT.

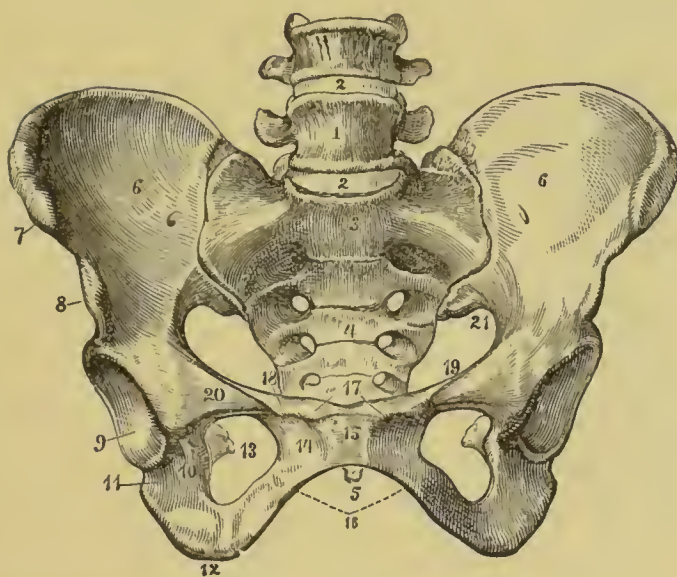
FIG. 15.



1. Lower part of the anterior vertebral ligament.
2. Pubic symphysis.
3. Ilio-lumbar ligament.
4. Sacro-iliac symphysis, with the anterior sacro-iliac ligament.
5. Obturator membrane.
6. Edge of the tendon of the external oblique muscle of the abdomen, technically named Poupart's ligament.
7. Extension of the latter along the pectineal line named Gimbernat's ligament.
8. Capsular ligament of the hip-joint.
9. A strong accessory band of the latter ligament.

FRONT VIEW OF A FEMALE PELVIS.

FIG. 16.



- | | |
|--|---|
| 1. Last lumbar vertebra. | 11. Body of the ischium. |
| 2. Intervertebral ligaments. | 12. Tuberosity of the ischium. |
| 3. Sacrum, the figure being placed on its promontory. | 13. Spine of the ischium, seen through the obturator foramen. |
| 4. Transverse lines indicating the original separation of the sacrum into five vertebral segments. | 14. Body of the pubis. |
| 5. End of the coccyx. | 15. Symphysis of the pubis. |
| 6. Iliac fossa. | 16. Arch of the pubis. |
| 7, 8. Anterior superior, and inferior spinous processes. | 17. Upper part of the body of the pubis. |
| 9. Acetabulum. | 18. Spine of the pubis. |
| 10. Its notch on the inner side. | 19. Pectineal line. |
| | 20. Ilio-pubic eminence. |
| | 21. Great sacro-sciatic notch. |

LYMPHATICS AND LACTEALS.

Lymphatic vessels are found in almost every part of the organism, arising at the surface of membranes

FIG. 17.



and in the tissue of organs; they carry into the veins the lymph from respective parts. The lymphatics are of two orders,—*i.e.*, superficial and deep seated; they often cross each other in their tortuous course, and their anastomoses are very numerous. Without a very definite knowledge of the remote arrangements of the vessels, we can only say that all the lymphatics of the body ultimately discharge themselves at the junction of the subclavian and internal jugular veins.

The lacteals are the absorbents which originate in the small intestines, and supply the mammary glands with milk during the period of gestation. During digestion these vessels contain a transparent, colorless lymph.

Whilst intestinal absorption is progressing after a meal containing fatty ingredients, the lacteals may be seen as white opaque vessels, distended with milky chyle; but the presence of chyle is only transitory. The nutritive materials soon pass by catalytic transformation into other forms, and become assimilated to the pre-existing elements of the circulating fluids, and belong to the great system of nutrition, absorption, re-absorption, secretion, and elimination.

NORMAL TEMPERATURE OF ADULT 98° TO 100°.

AVERAGE PULSATION PER MINUTE :

At birth.....	130 to 140
Puberty.....	80 to 85
Adult.....	70 to 75
Old age.....	50 to 65

PROPORTIONS OF BLOOD.

Average weight of blood, in proportion to entire weight of body, is as 1 to 8, consequently the body of a man weighing 145 pounds will contain about 18 pounds of blood.

According to another authority :

Blood arterial, 15 to 20 pounds.

Proportion of arterial blood to venous, 4 to 9.

The average proportion of each organic element in 1000 parts of healthy blood, according to Le Cann, and MM. Andrae and Gavarret: fibrin, 3; red corpuscles, 127; solid matter of serum, 80; water, 790; but in inflammation the amount of fibrin may be increased to 10, and the albumen diminished, as in Bright's disease of the kidneys, etc.; and in fevers, etc., the fibrin diminishes in quantity.

DIMENSIONS OF ORGANS.

The average weight of each organ in the adult. according to Quain, is as follows :

Heart, male.....	11 ounces.
“ female.....	9 “
Brain, male.....	49½ “
“ female.....	44 “
<i>f</i>	

Spinal cord.....	1 to 1 $\frac{3}{4}$ ounces.
Liver.....	50 to 60 “
Pancreas	2 $\frac{1}{4}$ to 3 $\frac{1}{2}$ “
Spleen	5 to 7 “
Lungs, male.....	45 ounces.
“ female.....	32 “
Thyroid cartilage.....	1 to 2 ounces.
Kidneys.....	4 $\frac{1}{2}$ “
Supra-renal capsules.....	2 drachms.
Prostate	6 “
Testes	$\frac{3}{4}$ to 1 ounce.
Unimpregnated uterus.....	7 to 12 drachms.

According to other authors the capacity and size of various organs :

Gall-Bladder, about.....	4 inches long.
“ “ capacity	1 $\frac{1}{2}$ fluid-ounces.
Spleen	4 to 5 inches long.
“	2 to 3 inches wide.
“	1 $\frac{1}{2}$ inches thick.
Kidneys	3 to 5 inches long.
“	2 to 3 inches wide.
“	1 inch, and over, thick.

EXUDATION AND ABSORPTION OF THE LYMPHATIC SYSTEM.

According to Dalton the total quantity of all the fluids secreted and reabsorbed during 24 hours indicates the activity with which endosmosis and exosmosis goes on in the living body. In the following table, the quantities are all calculated for a man weighing 140 pounds.

FLUIDS TRANSUDED AND REABSORBED.

Saliva.....	1280 grammes.
Gastric juice.....	3000 “
Bile	1000 “
Pancreatic juice.....	800 “
Lymph.....	2000 “
Total.....	<hr/> 8080

A quantity of the animal fluids, averaging from 14 to 18 pounds (12 per cent. of the bodily weight), transude through the internal membranes and are restored to the blood in the course of a day.

This will in part demonstrate to the thoughtful the necessity of keeping the alimentary system in a healthy state of nutrition, and will likewise prove that the ingredients of the digestive secretions affect the blood. It is the intimate relation and co-ordination of every atom of the component parts of the human organism which requires differential treatment and care in order to preserve the normal condition of health and development, and which demands that the vital changes constantly going on must be re-supplied.

Dalton estimates that the renovation of the body by the nutritive process equalizes the entire quantity of the material assimilated and that decomposed by the living body. The food taken into the alimentary canal absorbed by the blood after digestion, with the quantity of oxygen appropriated from the atmosphere in respiration, and the amount of carbonic acid evolved in the breath, with that of the various excretory sub-

stances discharged from the body; are equal in volume. The following table shows in an approximative manner the quantity of these different ingredients of ingesta and egesta:

Absorbed in 24 hours.		Discharged during 24 hours.	
	Pounds.		Pounds.
Oxygen.....	1.470	Carbonic acid.....	1.630
Water	4.535	Aqueous vapor.....	1.555
Albuminous matter.....	.305	Perspiration	1.930
Starch660	Water of the urine.....	2.020
Fat.....	.220	Urea and salts.....	.137
Salts.....	.040	Fæces.....	.358
<hr/>		<hr/>	
Total	7.230	Total.....	7.230

The average amount of fæces discharged in 24 hours is from 4 to 6 ounces, when the amount of solid food taken may have been 45 ounces.

The average amount of urine secreted in 24 hours is 52½ fluid-ounces.

In a healthy human subject of average weight (140 pounds) a little more than seven pounds are thus discharged and absorbed.

For the benefit of those who practise the Cranial Diagnosis the author inserts the following table of the nerves:

TABLE OF THE CRANIAL NERVES.

1. First nerve.....Filaments to the nose.
2. Second nerve.....To retina of the eyeball.
3. Third nerve.....To muscles of the orbit.
4. Fourth nerve.....To superior oblique muscle.

5. Fifth or trifacial nerve.

		Meningeal.		
		Lachrymal.....	{	Lachrymal. Palpebral.
		Frontal.....		Supra-orbital. Supra-trochlear.
Ophthalmic.....		Nasal.....	{	To lent. ganglion. Ciliary nerves.
				Infra-trochlear. Nasal.
Ophthalmic, or Lenticular gan- glion.....		Connecting branches.....	{	To nasal nerve. To the third nerve.
		Ciliary nerves.....		To sympathetic.
Superior maxil- lary.....		Orbital branch.....	{	Malar. Temporal.
		To Meckel's ganglion. Posterior dental anterior. Dental infra-orbital.		
		Internal branches.....	{	Nasal. Naso-palatine.
		Ascending.....		To the orbit.
Meckel's gan- glion.....		Descending.....	{	Anterior palatine. Posterior.
		Posterior..		External. Vidian.
		Small, or muscular part.....	{	Pharyngeal. Deep temporal.
				Masseteric. Buccal.
				Pterygoid.
	{	Large, or sensory part....	Auriculo - tem- poral.....	Articular, and to me- atus, parotid, au- ricular, temporal.
Inferior maxil- lary.....			Gustatory.....	To submaxillary and sublingual ganglia.
			Inferior dental.	To hypoglossal. To the tongue. Mylo-hyoid.
				Labial. Incisor.
Otic ganglion.....		Connecting branches.....	{	To Jacobson's nerve. To the fifth and sympathetic.
		Branches for muscles.....		To the gustatory chorda tympani, and sympathetic.
Submaxillary ganglion.....		Connecting branches.....		
		Branches to the glands and the of the mouth.		mucous membrane

6. Sixth nerve.....To external rectus.

7. Seventh nerve.	Portio dura..	Connecting branches...	<ul style="list-style-type: none"> To join auditory. To Meckel's ganglion. Tympanic and sympathetic nerves. The chorda tympani. Posterior auricular. Digastric branch. Stylo-hyoid branch.
		Branches for distribution.	<ul style="list-style-type: none"> Temporo-facial..... <ul style="list-style-type: none"> Temporal. Malar. Infra-orbital. Buccal. Cervico-facial..... <ul style="list-style-type: none"> Supra-maxillary. Infra-maxillary.
8. Eighth nerve.	Portio mollis.....		<ul style="list-style-type: none"> To the portio dura. Nerve to cochlea. Nerve to vestibule.
			To the semicircular canals.
	Glosso-pharyngeal.....	Connecting branches...	<ul style="list-style-type: none"> To vagus. To sympathetic.
			Jacobson's nerve. <ul style="list-style-type: none"> Joins otic ganglion. Supplies tympanum.
		Branches for distribution.	<ul style="list-style-type: none"> To carotid artery. To the pharynx. Tonsillitic branches. Muscular. Lingual.
		Connecting branches...	<ul style="list-style-type: none"> To glosso-pharyngeal. Sympathetic and auricular nerves. To the hypoglossal. Pharyngeal nerve.
	Pneumo-gastric.....	Branches for distribution.	<ul style="list-style-type: none"> Superior laryngeal. <ul style="list-style-type: none"> External laryngeal Ascending to the mucous membrane. Descending to join the inferior laryngeal.
			Cardiac nerves.
			Inferior laryngeal. <ul style="list-style-type: none"> Cardiac. Oesophageal. Bracheal. To constrictor and muscles of larynx. To join superior laryngeal.
	Spinal accessory.....	Connecting branches...	<ul style="list-style-type: none"> To pneumogastric. To the cervical plexus.
		Branches for distribution.	To sterno-mastoidcus and trapezius.

9. Ninth, or hypoglossal nerve.....	Connecting branches.....	<ul style="list-style-type: none"> To the pneumogastric nerve. To the sympathetic. To loop of atlas. To gustatory nerve.
	Branches for distribution.	<ul style="list-style-type: none"> Descendens noni thyro-hyoid nerve. To the lingual muscles and tongue.

TABLE OF THE SPINAL AND SYMPATHETIC NERVES
OF THE HEAD AND NECK.

SPINAL NERVES.

The cervical spinal nerves divide into	Anterior branches.	The first four form the Cervical plexus, which gives off.....	Superficial ascending.....	<ul style="list-style-type: none"> Small occipital nerve. Great auricular. Superficial cervical.
			Superficial descending.....	<ul style="list-style-type: none"> Supra-acromial. Supra-clavicular. Supra-sternal. To the pneumogastric. To the hypoglossal. To the sympathetic.
			Deep internal..	<ul style="list-style-type: none"> To rectus major muscle. To diaphragm nerves to descendens noni. To join the spinal accessory. To the sterno-mastoides. To the trapezius. To the levator anguli scapulae.
		The last four and first dorsal form the Brachial plexus, which gives off.....	Branches above the clavicle.....	<ul style="list-style-type: none"> The rhomboid nerve. To the phrenic nerve. Supra-scapular nerve. Subclavian branch. Posterior thoracic, or respiratory. To the scaleni muscles.
	Posterior branches.		Branches below	<ul style="list-style-type: none"> Are dissected with the upper limb.
		Are distributed to the muscles of the back, and give off cutaneous nerves.		

SYMPATHETIC NERVE.

The sympathetic nerve has in the neck	1. Superior cervical ganglion has	Ascending branches, which unite in plexuses.	Carotid plexus, which gives...	Branch to tympanic plexus. To the vidian. To the sixth and fifth cranial nerves.
			Cavernous plexus, which gives branches.....	To the third cranial nerve. To the fourth cranial nerve. To the fifth and lentienular ganglion. To the carotid artery and branches.
			External branches...	To join pneumogastrie and hypoglossal nerves to the spinal nerves.
			Internal branches...	Pharyngeal branches. Superficial cardiac nerve.
	2. Middle cervical ganglion...	Branches to vessels. External branches.	Nervi molles.	
			To the spinal nerves.	
	3. Inferior cervical ganglion...	Internal.....	Middle cardiac nerve, to supply thyroid body and join the external laryngeal.	
			To the subclavian artery.	
			To the spinal nerves forming vertebral plexus.	
			Inferior cardiac nerve	

TABLE OF THE SPINAL NERVES OF THE UPPER LIMB.

Brachial plexus gives off below the clavicle.	Anterior thoracic.....	Superficial.
		Deep.
	Subscapular.....	Superior.
		Inferior.
	Circumflex.....	Long.
		Articular.
		Cutaneous.
	Nerve of Wrisberg.	To teres minor.
		To deltoid.
	Internal cutaneous...	Small cutaneous.
		Anterior of forearm.
		Posterior of forearm.
	Musculo-cutaneous...	To coraco-brachialis biceps and brachialis anticus.
		Cutaneous external of forearm.
		Articular to carpus.
	Median.....	To pronator teres.
		To muscles of forearm, except flexor ulnaris and part of profundus.
		Anterior interosseous.
		Cutaneous palmar. To muscles of thumb in part. Five digital branches.

Brachial plexus—continued.	Ulnar	Articular to elbow. To flexor carpi ulnaris. To flexor profundus in part. Cutaneous branch of forearm and palm. Dorsal cutaneous of the hand. Superficial palmar di- vision { Communicating two digital branches. Deep palmar nerve. Internal cutaneous. To triceps and anconeus. External cutaneous. To supinator and extensor radialis longus.
	Musculo-spiral.	Posterior interosseus... { Muscular. Articular. Cutaneous of back of thumb and of first two fingers and half the next. Radial

TABLE OF THE SPINAL NERVES IN THE ABDOMEN.

Lumbar spinal nerves divide into	Posterior branches.	Internal..... Muscular. External..... { Muscular. Cutaneous. Ilio-hypogas- tric..... { Cutaneous of the ilium. Hypogastric branch. Ilio-inguinal... To integuments of the groin. External cuta- neous..... { To integuments of the thigh. Genito-crural.. { Genital branch. Crural branch.
	Anterior branches; of these the four first end in the lumbar plexus,* which supplies...	Branches in- side the pel- vis..... { To the iliacus muscle. To the femo- ral artery. Branches out- side the pel- vis..... { Are noticed in the thigh. Obturator..... Accessory..... { Other offsets are described in the thigh.

* The lumbo-sacral gives off the superior gluteal nerve.

Gangliated cord of the sympathetic nerve in the abdomen supplies...	External branches.	{	To the lumbar and sacral spinal nerves. To aortic plexus. To hypogastric plexus. To join round middle sacral artery between the cords on the coccyx in the <i>ganglion impar</i> .
	Internal.....		
This receives.....	Great splanchnic nerves.	{	This is joined above by... { The aortic plexus. Filaments from the lumbar ganglia.
	Part of small splanchnic. Offset of pneumogastric.		

PNEUMOGASTRIC NERVE IN THE ABDOMEN.

Pneumogastric.....	Right.....	{	Coronary branches to the back of the stomach. Filaments to join the coeliac and splenic plexuses.
	Left.....		

CHAPTER V.

MEDICAL ELECTRICITY.

ELECTRICITY is one of a great variety of forces, all of which are probably of identical essence, viz., motion, and are therefore now popularly known as "modes of motion."

Whether electricity is, as many scientists claim, the element in which resides the sum of all forces and motors, it is a settled fact that natural electricity is present in all bodies. Whatever the ultimate combination of forces may be which produces in animate beings the result so vaguely called "life principle," the author claims that there are in the human system a sufficient number of phenomena accompanying nervous and muscular and nervous and arterial action to demonstrate that the said "life principle" is something analogous to electricity, and that this force, properly distributed throughout the organism, maintains health, and when disturbed results in disease, and when suspended, is death.

As electric forces of the human organism are simply modifications of those which vitalize nature at large, it follows that any excess or diminution in their quantity, or any impoverishment of their quality, must result in a disordered condition of the organism.

Vital forces, in health and disease, are but modes

of motion. Thus electricity and vital force are assimilated.

Curative and pathogenic agents of all kinds, electricity included, are such by virtue of the forces or modes of molecular motion, which they are able to excite in the living organism,—*i.e.*, in the sphere of vital force.

Curative and pathogenic agents aside from hygienic agents, and such like, differ from each other only in consequence of their force-waves; being homologous, or heterologous with objective forces. The homologous co-operate in maintaining health and in curing disease; the heterologous impair health and prevent cure.

Electricity, in its many modifications, may be so administered as to be thus homologous to the organism as a whole, as well as locally; and, on the other hand; so as to be heterologous; hence, may be both curative and pathogenic.

Graduation of quantity and tension of the electrical currents; the choice of the currents themselves; a minute subdivision or otherwise of such currents, by slow or rapid interruptions; the discriminating application of the negative and positive poles; and the direction and course of the currents, are the ordinary means of rendering the use of this agent curative in disease. And whatever be the electric-curative, it may be relied on as certain that a misuse of the same agent will result unfortunately, and with detriment to health.

The word quantity is often confounded with the word primary, as applied to currents; and the word

intensity is often confounded with the word secondary. This is because we usually see the primary current,—*i.e.*, that known as voltaic or galvanic and coming directly from the cups—obviously active only when the amount of generating surface and the resultant amount of electricity are very considerable; its flow being quiescent. But the secondary or “induced current,”—obtained by means of a coil of fine wire simply brought near to the primary, and known also as faradic, from Faraday, who described it,—is generally seen in a state of concentrated and precise mobility which enables it to pass with a sort of momentum through matter which would only absorb, as it were, the more indefinitely and sluggishly moving primary current. The two differing somewhat as do a conical bullet from a rifle, and the charge of small shot from a fowling-piece. But the primary current gets tension from a subdivision of the pair of primary plates into co-operative series; and the secondary current gets both amount and measurably the condition called quantity, by changing mere matters of mechanism, and the character of the conducting media.

Using the word “quantity” rightly, we mean that this is a condition in which either a large or a small amount of electricity is indifferent in regard to any given line of polarization; hence diffuses itself near and around its point of liberation, and readily becomes transformed by obstacles into other forces, as in the heating of a wire, which forces the electricity suddenly into concentration.

Of “intensity,” in like manner, we say that it is

also a condition; the—large or small amount of—electricity is concentrated; drawn, as it were, from a nebulous diffusion into the form of a thunder-bolt, and thus made intensely polar, and so capable of passing, in comparatively tenuous lines, through intervening matter, instead of over it, and only into it.

From the foregoing, we shall see why we must still use the primary current in most cases requiring the condition named quantity; and the secondary current in most cases requiring the condition called intensity; without forgetting that the primary current may be had in high tension, or that the secondary current may be had in connection with great amount, provided the coils be not destroyed in its passage.

All these variations have an individuality as well as a therapeutic value of their own. Thus the primary current, applied to tumors, is highly electrolytic,—having the power to decompose morbid matter.* It affects healthy muscles, on the other hand, very little; but the secondary affects muscles very much (the amount aside).

Muscles with eccentric paralysis, as from lead, on the contrary, are very apt to be responsive, more or less, to the primary, not at all to the secondary current. Electrical gymnastics restore such muscles and their nerves; using always the current which most affects them, and changing as their approach to health alters their susceptibility.

* This is especially marked in the current produced by the SILVER HELIX recently invented and patented by the author.

Healthy nerve-trunks feel it very little, but to it neuralgia is most amenable, as is also the function of the optic nerve.

Ordinary primary current batteries, however, to be effective must be bulky and expensive; and judging from the practical success of the system herein detailed, almost needless; cures being rapidly obtained in curable cases by simpler and more portable, as well as less costly apparatus; a point on which superiority may justly be claimed for the system itself.

Acute lesions or acute morbid processes, even of the brain and spinal cord, are no contra-indications for the proper use of electricity as a curative. In this, of course, the author is aware that she is contradicted by most practitioners, and yet can but reiterate the statement from the abundant teachings of a long and varied experience.

Except for purposes of rapid cauterization (comparatively but rarely needed, even for the separation of pedunculated tumors, as will be seen under that head, in this volume), the combination batteries of the author are quite adequate to all the exigencies of Electro-Therapeutics. These batteries consist of zinc and carbon plates (immersed in a solution), with a system of helices, whereby the tension of the resulting currents is modified, as every factor in every current must modify the current itself; and the primary current is also combined with the secondary in actual administration in greatly different degrees.

Hence, according to the posts (lettered from A to

F and to H, respectively, also the SILVER HELIX) to which the conductors are attached, one may vary the nature of the resulting current very much. These batteries have also a special mechanism in a sliding cylinder or piston for regulating the strength. Grose's, Bunsen's and Daniell's batteries are simply modifications intended to secure permanent and steady activity.

The different qualities of the several currents of the combination battery render them homologous to the forces inherent in the various and different tissues of the body, as well as to various morbid products, and even to extraneous and pathogenetic materials finding place and working mischief therein. Hence by properly individualizing the cure of disease and the currents of electricity, all curable diseases, and many called incurable, whether dynamic merely, or substantial and organic, are amenable to Electro-Therapeutics. The several currents, like analogous drugs, may, however, stimulate each other under varying conditions of the vital factor.

Even with such careful selection of the appropriate currents, excessive use of the same, either in strength, frequency, or duration of treatment, may produce or aggravate the very symptoms which the same currents, used with due caution according to the directions herein given, will cure.

For instance, a certain current being applied strong through a metal surface on the skin for a length of time, develops a burn at the negative. But a short application of the same current, weak, and with a wet napkin between the metal and the

skin, is a perfect curative for burns. And so on through the whole field of morbid irritations.

Diseases are found practically to consist of local or general conditions, or both; and however similar their names, and even their symptoms or functional manifestations, or indeed their organic lesions, may differ widely in different persons, or in the same person at different times and stages.

In general we may say the difference may be commonly found connected on the one hand with irritative, and on the other hand with parietic states. Locally, and in previously healthy persons, the irritative state predominates and calls for a specific method,—that of functional regulation, first of all, with concomitant nutritive influences,—in electric treatment.

In the sphere of the general system, in very many cases, the same is true; yet, in other cases and after exhausting or relaxing influences, local or general, the parietic state predominates, and calls for a different application of the same currents,—that of nutritive regulation with concomitant functional effect.

The mere presence of electricity has some influence in both these ways, but the specific stimulating functional influence prevails in the DIRECT, or downward running currents; the sedative and nutritive in the REVERSE, or upward running currents; counting the positive pole as that which gives the flow, and the negative as that which receives it in the molecular movement which completes the electric arc.

In the vast majority of cases the downward currents are to be chosen. These may run on the track of the nerves or athwart them, according as a ner-

vous or purely organic action is wanted ; or rather according as the cerebro-spinal or the sympathetic nerves are to be addressed ; or according as the venous or arterial circulation may be assailed. In a few cases, as in hæmorrhoids, diarrhœa, and especially paralysis proper, the negative of paretic conditions is to be met by currents of electricity given in reverse directions,—that is, the negative pole placed superior in position to the positive pole.

Various electrodes (flat appliances made of three metals so combined as to produce in themselves a silent electric current*) may be used as the cases require. About eight of different dimensions (see diagrams) being necessary. These the operator attaches, by means of the small groove on the under side, to one end of each conducting cord ; the other ends are inserted in the posts of the battery. Two electrodes of some description must be used, as it is necessary the circuit should be closed between the positive and negative poles before the electric current from the battery flows. These electrodes should ALWAYS be covered with heavy linen towelling bags or cases, thoroughly wet with warm water on the side to be placed next the patient.

The aim is always to include or involve the whole site of the morbid process of disease, so far as may be possible, between the electrodes. For particular purposes, the round nickel-plated electrodes,

* The metals used in the author's patented electrodes are of a peculiar alloy and combination, and to this arrangement great importance is attached as preventing the passage of metallic molecules from the battery into the body.

two of which are furnished with each battery, may be employed, covered or not with a thin sponge, always wet. When it is to be administered through the person of the operator, which makes the electricity highly *electro-magnetic*, the current should pass mainly from left to right. Excess causes debility to the operator, antidoted by passing the same current from right to left; upward and downward are also mutually antidotal. The maplewood sponge-cup, of about two and one-half inches diameter, with a handle some six inches long (see cut), is held in the left hand of the operator or patient, as the case may be, the right being used to give off the positive to the patient; although the practice of conveying electricity through the operator to the patient is considered, as a rule, exceedingly prejudicial to the former, and the same benefits can be obtained by the direct use of the sponge-cup on the patient. This sponge-cup is very useful in the treatment of numerous maladies. Besides these, many forms of electrodes may with ingenuity be extemporized when peculiarities in cases demand special contrivances. A great variety of appliances are handsomely made and sold by dealers in surgical and electrical apparatuses, which every practitioner should possess (see diagrams), many of which prove indispensable for the treatment of internal parts, as the bladder, uterus, rectum, nose, ear, etc. The glass eye-cup and the metallic brush are included. A foot-tub is requisite for various purposes, also a basin (ordinary toilet appurtenances can be utilized), and a number of pieces of rubber cloth, of different sizes, for protection of the clothing against dampness.

Dry application to the skin is made for a purely cutaneous effect. Deep action demands moisture either by means of wet-sponge or cloths. Slight pressure induces deep and penetrating action.

The distance between the poles being increased diminishes the effect at any one point between them. The strength of the current should have some reference thereto, and can be regulated by the sliding cylinder.

If possible little children should first be made accustomed to the apparatus in action, and to the electrodes upon the person before any currents are administered; and should be treated very mildly at the first actual passage of the electric current, if the case is not too urgent to consult these points. The successful physician invites the confidence and composure of the patient, instead of assailing the disease with sovereign indifference, regardless of the patient's idiosyncrasies.

Posture is often important. Displacements, all pelvic troubles, and some cases of debility require recumbency. When the negative is directed to the lower extremities, as often occurs, the feet may be placed with the negative in the foot-tub with hot water, or on an electrode; or a long electrode may be laid on a rubber cloth on the bed or lounge, beneath the ankles of both legs. The effects are similar in a general way. Of course the positive is assigned its proper position on the patient in accordance with the requirements of the disease being administered to.

A most important special method is the electric vapor bath. Its use recurs constantly in the course

of practice, and is considered almost indispensable, and as greatly accelerating the desired effect by restoring normal circulation, and by cleansing the pores inducing wholesome cutaneous action. Outside of an establishment, it can be made available for home purposes, by employing the portable apparatus herein described, and illustrated by DIAGRAM.

A wooden closet or cabinet commodious enough to stand up in, and broad and deep enough to allow free action of the arms and legs, the bottom lined with zinc to catch the condensed vapor and the water. A latticed seat is adjusted at the back part of the interior of the cabinet opposite the door, and this is always covered with a small crash towel to prevent the hot vapor from coming too freely about the thighs and spine. A foot-tub supplies hot water for the feet. A bowl containing cold water, and a small towel with which to cool the head, or when a sense of suffocation seems to ensue, to breathe through. A side window or aperture through which the arm of the operator may pass freely, is on the left of the bath, over which is hung a curtain from the inside to prevent exposure of the patient and keep the vapor from rapid escape, as well as for warding off any draughts of cold air. Beneath the window at the forward part of the cabinet is a shelf, upon which the operator's battery is safely set. The conductors used where any moisture exists, are covered with pure rubber tubing, to protect them against damage. A portable steam-boiler, heated by a gas-stove, or so made as to fit any stove as a teakettle does, with rubber tubing or an iron pipe to conduct the vapor

to the bath-cabinet, can be regulated with perfect safety, if judgment is exercised in keeping the boiler supplied with sufficient water to generate the vapor as rapidly as exhausted, and in keeping enough water in it to prevent collapse; which only could result from overheating the empty boiler.

The bath should be thoroughly heated before the patient enters, and all qualms as to suffocating will disappear as soon as perspiration ensues. A gentle friction can be effected by rubbing, either with the palm of the hand or with a crash towel, on the chest, legs, arms, neck, and face, and the scurf skin will become detached in an astounding manner. The temperature should range from 90 to 120 degrees. Occasionally a patient may experience excellent results by a higher temperature. The period of vaporizing should not exceed twenty-five minutes,—about ten minutes after perspiration commences. The electricity is administered—the negative with round electrode in the foot-tub, or, as sometimes ordered, in No. 7 electrode on the seat, covered with a wet towel for the patient to sit upon; and the positive in the sponge-cup passed down the spine slowly from the base of brain, diverging *ONLY* when reaching the lumbar region, when the sponge-cup may be passed obliquely from the median line of the spine to one hip, then to the other. The patient must sit forward on the seat, that the arm of the operator may have free action and admit of lifting the sponge-cup off the patient, when an interrupted return from the coccyx to basilar is made; for again it is urged by the author, that the electrization should always

be given (except when some peculiar emergency demands reversal) from the base of brain down the spine; or—if given on the epigastric region—as directed. In some cases the patient can be more conveniently reached if standing.

The patient should sponge off in tepid or quite cool water, and rub thoroughly in the bath-cabinet after the vapor has been shut off. Some patients allow the attendant to thoroughly rub them with coarse crash towels, then emerge, don their clothing rapidly, and exercising due care to AVOID DRAUGHTS, may go out as soon as cooled off sufficiently to denote reaction. For the first attempts with the vapor-bath, it will be advisable to shun lowering weather and general negative conditions of the atmosphere.

Instead of producing a debilitating effect, as the uninformed might anticipate, when one has taken a brief rest after the fatigue of dressing the effect is truly exhilarating. The author personally can commend the efficacy of the vapor-bath when weariness and cold are settling upon the physician exposed to inclement weather. Frequently a vapor apparatus has been most ingeniously devised in an emergency.

It is remarked that the dynamic and molecular movements in bodies traversed by electric currents tend to pursue the routes of such currents. The platinum point, for instance, upon which the trembler plays in vibrating, has been found excavated after prolonged use, and a corresponding little metallie bead deposited on the plate below. So, also, after a treatment, mercury has been found in the

foot-tub, with the negative. And the thermal flow will soon be noted in the feet, when the same pole is applied, as well as increased circulation of the blood.

For this reason, morbid material should invariably be invited to an eliminating surface or organ, as the feet or skin, or the alimentary mucous tract.

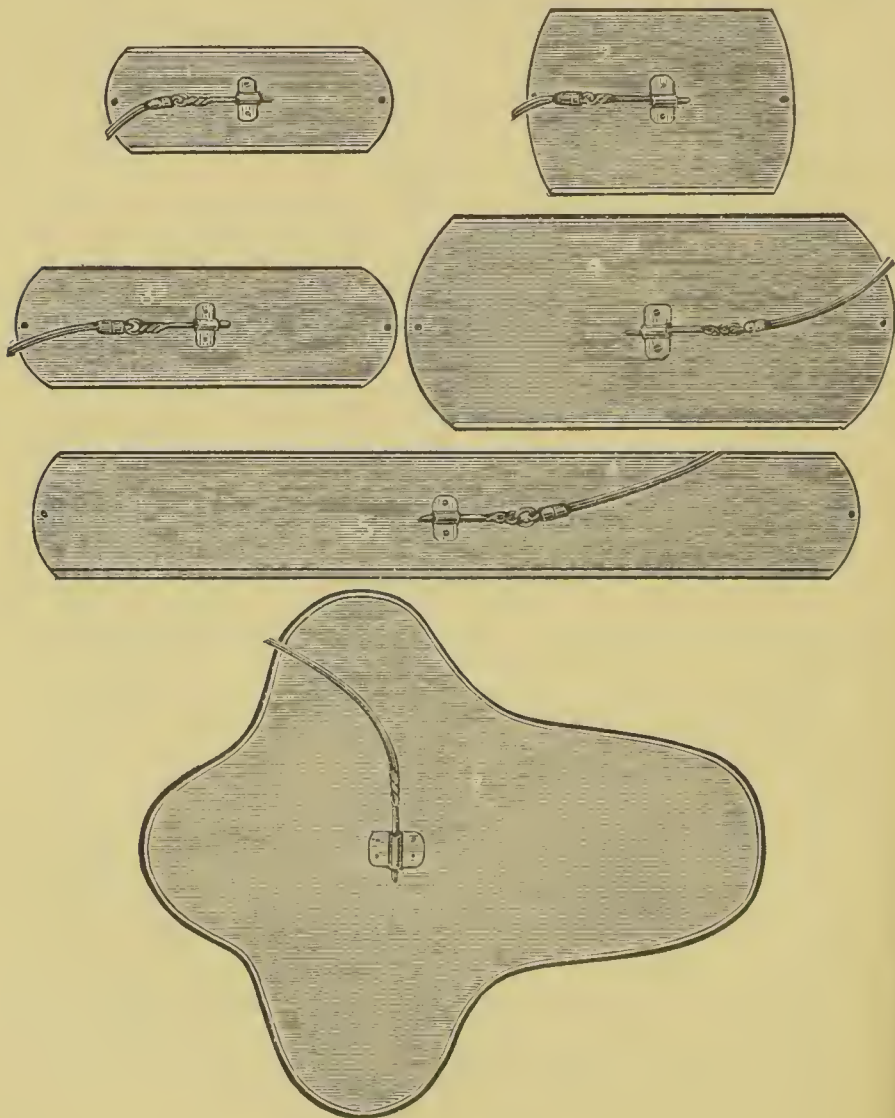
For a like reason, the greatest caution is necessary when manipulating about the head, eyes, or chest. The brain and lungs are not a little intolerant of electricity; and as to the primary current, the optic nerve also. The cerebrum should be guarded against all rash treatment; but the basilar region of the occiput (base of brain) is the favorite locality for the positive pole. Upward and reverse currents may be needed in paretic states. Faintness and nausea sometimes signalize depletion of the brain, during the flow of a downward current. Giddiness is a fair warning of mischief, and changing the current is often antidotal. The manipulations of the chest are very considerably limited to the median line, front and back; in fact, the direct applications over the lungs are confined to the breast-bone and the spinal column.

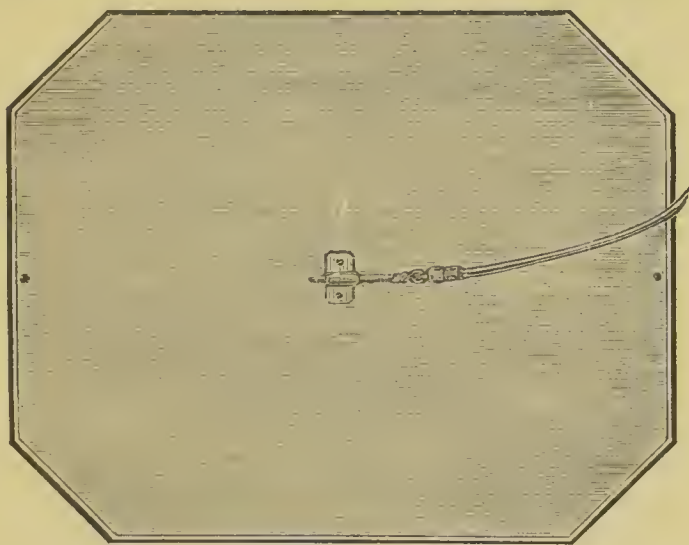
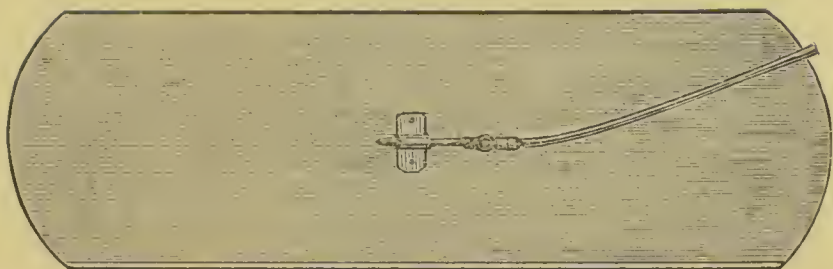
ILLUSTRATIONS OF APPLIANCES USED BY AUTHOR.

The following cuts represent the comparative sizes and shapes of the electrodes for general use, and will hereafter be alluded to by numbers.

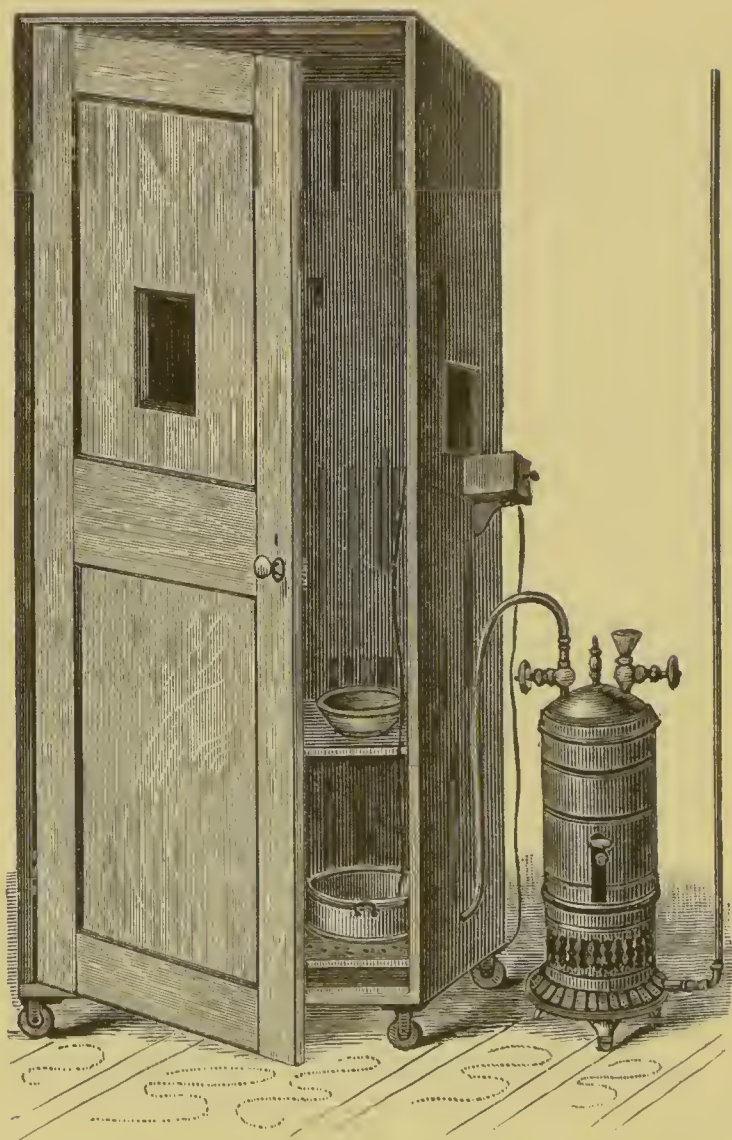
TABLE OF COMPARATIVE SIZES OF PATENTED COMBINATION ELECTRODES.

No.	Inches.	No.	Inches.
1.....	$1\frac{1}{2} \times 3\frac{3}{4}$	5.....	$2 \times 11\frac{3}{4}$
2.....	$2\frac{3}{4} \times 3\frac{3}{4}$	6.....	$4\frac{1}{4} \times 11\frac{3}{4}$
3.....	$1\frac{3}{4} \times 5\frac{1}{2}$	7.....	$8\frac{7}{8} \times 9\frac{7}{8}$
4.....	$3\frac{1}{8} \times 6\frac{3}{4}$	8.....	$10\frac{3}{4} \times 11\frac{1}{2}$



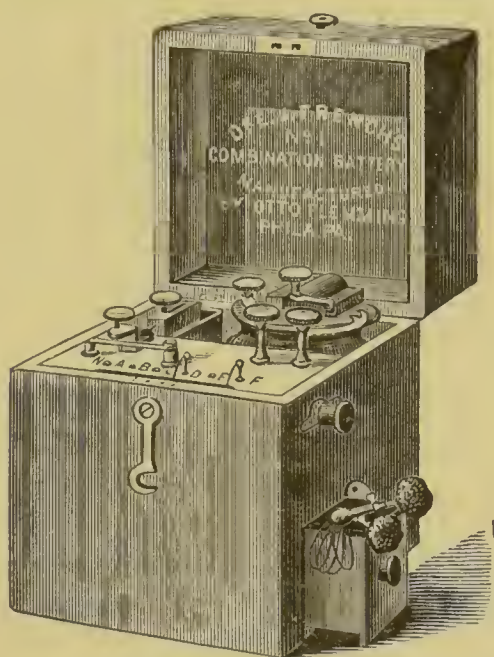


SPONGE-CUP.



PORTABLE VAPOR-BATH CABINET AND BOILER.

DR. ELIZABETH J. FRENCH'S COMBINATION BATTERY, No. 1, has five differently conditioned coils in the helices, arranged to use in various connections, producing fifteen different qualities or currents of

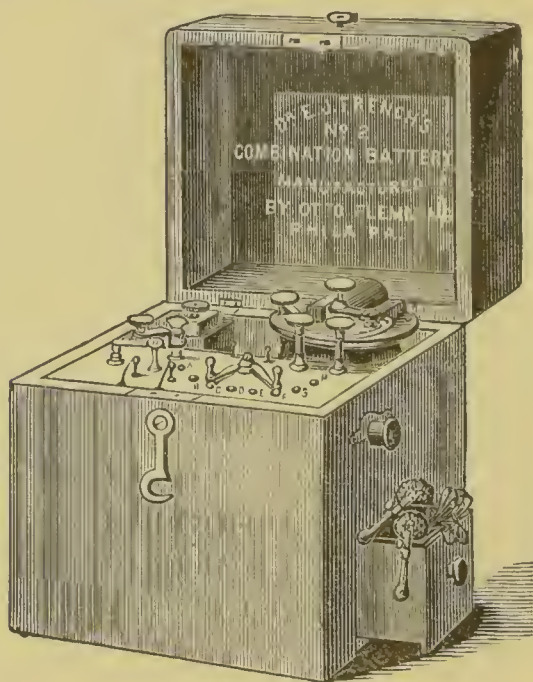


electricity, as follows: A-B, A-C, A-D, A-E, A-F, B-C, B-D, B-E, B-F, C-D, C-E, C-F, D-E, D-F, and E-F.

The common electrical machines are made on the principle of simply creating power. They have only two helices and two currents, the inner helix being always a necessity for producing the current on the outer helix; and they have too often been considered valuable in proportion only as they produced pain.

How would such a rule apply in buying a musical instrument? What would one think of a person

who selected a piano solely from the amount of pain its noise would give the ear, or for the finish of the case? Do not all persons carefully regard the quality of the music it is capable of offering to the human ear? Also, what would the most costly piano be worth if its strings were not tuned in accordance with the philosophy of the octaves, diapason, and diapente, within the degrees recognized by the human ear? How important it is, then, that an electrical machine for remedial uses should have the pitch of its currents not only sufficiently definite and varied, but also harmonized to meet the wants of the vital nervous system when used for the treatment of disease.



DR. ELIZABETH J. FRENCH'S COMBINATION BATTERY, No. 2, has seven differently conditioned coils

and combined metals in the helices, arranged to produce twenty-eight different grades of electrical currents, as follows: A-B, A-C, A-D, A-E, A-F, A-G, A-H, B-C, B-D, B-E, B-F, B-G, B-H, C-D, C-E, C-F, C-G, C-H, D-E, D-F, D-G, D-H, E-F, E-G, E-H, F-G, F-H, and G-H.

DR. ELIZABETH J. FRENCH'S COMBINATION BATTERY, No. 3, arranged to produce twenty-eight different grades of current, but much more complete



than No. 2, and provided, besides, with the rapid vibrator, with Flemming's slow interrupting rheotome, and commutator, or pole-changer, etc.

DR. ELIZABETH J. FRENCH'S COMBINATION BATTERY, No. 4, is similar to No. 3, but has her latest patent, the SILVER HELIX in addition.

CARE OF THE BATTERY.



The SOLUTION for the batteries consists of one and three-quarters ($1\frac{3}{4}$) ounces bichromate of potassa, three-quarters ($\frac{3}{4}$) of an ounce of saltpetre dissolved in twenty-seven (27) ounces of hot water, in an earthenware vessel. When cold, add three (3) fluid-ounces commercial sulphuric acid, and one-quarter ($\frac{1}{4}$) ounce bisulphate of mercury (avoirdupois).

In filling and emptying the cell do not remove the top; as doing so gives needless trouble and renders the carbons liable to be broken. Use the central aperture. Do not fill the cell above the lower part of the curve of the neck, and never use hot or warm solution.

CAUTION.—The battery-fluid will eat and destroy any fabric with which it comes in contact, unless immediately sponged out with pure water, and the material moistened in a solution of aqua ammonia, which will restore the color. It is wise to keep a small bottle in the case. The person using the battery should avoid breathing the emanations which are emitted from the open-cup.

TO START THE BATTERY.

Place the cell in its receptacle, immerse the zinc plate with its connecting clamp through the aperture, and connect the clamp and the binding-post of the carbons on the left with the two binding-posts

of the instrument by means of the wires.  See that the zinc does not touch either of the carbons in the cell by tilting to one side. 

The immersed surface of the zinc plate may be increased or diminished by changing the position of its clamp up or down, thus increasing or diminishing at pleasure the QUANTITY of electricity evolved. Before the lower half of the zinc is entirely eaten away, it may be turned in the clamp and the other half immersed, thus utilizing the whole plate.

When removing the zinc from either the rubber-cup or the battery-cell, be careful that no mercury or fluid drops on any part of the apparatus; the acid will stain the wood and eat off the nickel-plating, and, if allowed to dry under or around the hydrostat, will crystallize and prevent its being fluid-tight. Always leave the cell open a few minutes after using, to permit the escape of the hydrogen gas generated during action. This gas must escape in some way, and if the hydrostat be screwed down immediately, the confined gas will force its way up between the carbons and the brass frame to which they are attached, and the fluid will follow by capillary attraction through the air-spaces thus made.

To prevent irregular working of the battery the zinc should be kept well amalgamated,—*i.e.*, well covered with mercury. For this purpose some bisulphate of mercury is added to the solution, which obviates the necessity of keeping quicksilver in the rubber cup. Always replace the zinc in the rubber cup after using the battery.

If the trembler, or interrupter, should not start

itself, a slight touch of the finger will set it in motion. If the battery stops during application, it may be started again by shaking the zinc to remove the hydrogen gas from the surface of the negative plates, when that causes the stoppage.

The rubber on the hydrostat may be turned around occasionally in order to present a new and closer surface to the edges of the aperture. In replacing a broken carbon with a new one, use sealing-wax to make the aperture fluid-tight.

When the battery-fluid grows weaker with use, or becomes decomposed (of a greenish-black color), it should be renewed. Also, when the current becomes very weak it is usually an indication that the fluid needs to be renewed, or the zinc reamalgamated.

The greatest care should be exercised to keep the battery as clean as possible, in order to insure its perfect working. The metallic parts especially should be kept scrupulously free from all dust, dirt, and oxidation.

PART II.

THE RATIONALE OF CURE.

ELECTRICAL DIAGNOSIS.

THE office of electricity as a diagnostic is only beginning to be appreciated. Indeed, no less a practitioner than Doctor Tibbitts, author of a book on medical electricity, limits this office far more closely than the facts warrant, viz., to the mere distinctions between the several forms of paralysis, by the comparative effects of galvanic and faradic currents. These are indeed of capital importance, both in diagnosis and treatment, and may as well be stated here in brief, after which a wider range of view may be profitably taken. To begin with, muscles and nerves are normally responsive, to some extent, to all varieties of electricity. Deficient or excessive response argues a corresponding nutritive and functional activity.

The object, then, is to obtain the vital response to the currents, in the forms known as electro-sensibility and electro-contractility.

The activity of the battery being always known, the vital response is measured, either by similar portions of the patient's sound parts, or those of another similar person. The ball of the thumb is a good

test-point, and the operator ought always to test any current first upon himself.

LOCAL ORGANIC DIAGNOSIS.

Irritation and paresis of organs are sought for, by placing the poles successively over them. Sensibility and contractility are increased with irritation; decreased with paresis. Of course, the current must be so directed as to traverse the organ examined. The former is sometimes spoken of as a positive state; the latter as negative, and they require the influence of opposite poles and currents; the former from the part, or through it; the latter, to it.

Local irritation, not very deeply seated, often displays, after a few minutes, circumscribed cutaneous redness; this is often seen upon the spine, after applying the sponge-electrode. (Electric currents applied through dry metal may produce similar evidences of irritation anywhere.)

SPINAL DIAGNOSIS.

The negative pole being at the feet; the positive, with sponge-electrode, on the spine; tender or insensible spots may be found. The former may be due to local trouble, easily obvious to examination by electricity—even with wet sponge—in the production of cutaneous redness. If the tenderness arises from other than local trouble, the cause will probably be discovered in the outlying viscera, etc.; as ascertained, for instance, by Keen's Flowers' Nerve Charts. Insensibility may also be either purely local, or sym-

pathetic. The conditions indicate the curative applications.

CRANIAL DIAGNOSIS.

In like manner, but more marvellously, it has been abundantly shown in the long experience of the author that different localities about the head also correspond with internal viscera, etc.; and that even the precise nature of the trouble can, by the different sensations elicited by the electric touch, be defined with an accuracy quite transcending the ordinary diagnostic methods, and at a stage in which disease utterly eludes those methods, in many cases.

All attempts heretofore to make known this really important discovery have subjected the author to abuse, as might be expected. But, waiving all such considerations, the discoverer hopes to put it within the power of every scientist or physician to avail himself of its aid, as soon as the proper charts can be perfected; assured that whilst pride may seoff, as always, yet wisdom shall still be justified of her children. This system of CRANIAL DIAGNOSIS, by which the character of disease and the locality of the parts affected can be determined with great certainty, is taught only by its discoverer, the author, and by her daughters. So positively has its efficacy been confirmed by many years of experience, that the author desires to impress upon those administering electricity as a curative agent, the importance of relying upon the unerring indications resulting from her method, in preference to accepting as accurate any presumption or indication of disease not corroborated by the CRANIAL DIAGNOSIS.

DIFFERENCE IN ELECTRICAL CURRENTS.

Each of the twenty-eight currents of the combination battery has a different physiological effect, which the experience of every-day practice has demonstrated, and in many of which differences are easily distinguished by the senses. The eight posts are marked from left to right alphabetically,—A, B, C, D, E, F, G, H. Of these the first four are connected with the copper wires of the helices, E and F with the iron wires, G and H with the brass wire. It is claimed that different and better results can be obtained in practice from this variety of currents than by the ordinary methods. Some of the leading properties of these currents may be enumerated as follows :

A-B, magnetic-anodyne and soothing current.

A-C, nerve-current, sedative, anæsthetic current,—for nervousness, pain, soreness, paralysis, etc.

A-D, muscle-current, forcing, eliminating, or running-off current,—used always in the vapor-bath, also to complete many treatments.

A-E, shock!—applied where there is insensibility to other currents, in cases of fainting, spasms, or convulsions.

A-F, emollient current,—applicable to mucous membranes and tissues, especially beneficial in affections of the throat.

A-G, alterative current, also tissue-tonic,—used in dropsical and anæmic conditions.

A-H, arterial stimulant and circulatory current,—arousing from inertia and relieving the apoplectic tendency.

B-C, blood-current, and ordinary styptic, when reversed ; acts on the sanguified functions,—used for humoral taints, etc.

B-D, febrifuge, breaking-up, anti-congestive current,—having a special affinity for the general tissue framework, ligamentous tissues, etc.

B-E, main styptic current, when reversed, anti-phlogistic,—used direct.

B-F, astringent current,—especially adapted to the destruction of the virulence of cancers and extirpation of tumors.

B-G, powerful antiphlogistic current,—used in connection with B-E and D-G currents.

B-H, diaphoretic current,—used to relieve high internal inflammation, by inducing perspiration and carrying it off through the pores of the skin.

C-D, permeating current,—its use is indicated for internal purulent accumulations, in connection with B-D and C-G currents.

C-E, absorbent current, including lymphatics and lacteals ; warming current, in coldness of surface and substance without chilliness.

C-F, cerebral stimulant current, arousing from benumbed life into action,—used in comatose conditions.

C-G, penetrating anti-congestive current,—used in connection with B-D and C-D currents, for fevers, tumors, and sprains.

C-II, disintegrating current,—applicable to cancers, tumors, and all morbid growths.

D-E, warming and digestive current,—used in connection with D-G current, for indigestion, ague, etc.

D-F, excito-motor stimulant current,—for paralysis, also tumors.

D-G, liver-tonic current,—used for morbid liver, indigestion, dyspepsia, ague, etc., in connection with B-D and D-E currents.

D-H, powerful general tonic current.

E-F, eye and ear nerve-tonic current,—used for defective vision, deafness, catarrh, etc.

E-G, nerve-stimulant current,—used in depletion from over-work or anxiety, hysteria, sensory paralysis, etc.

E-H, antispasmodic current,—used for chorea, nervous chill, etc.

F-G, mild general tonic current,—used to commence the building up of the system after continued fevers, long illnesses, the removal of cancers, tumors, etc.

F-H, paretic, nutritive current,—its use is indicated in all inactive, paralyzed parts, from debility.

G-H, antiseptic current,—used for suppuration and ulceration, external and internal, also in cutaneous affections.

The recently-patented SILVER HELIX (producing an electric current through a silver wire) is contained *only* in the author's No. 4 Battery, and invariably benefits special nervous disorders, such as rheumatism, neuralgia, etc., and its use is indicated in all cases where a calmative is necessary to control pain. It will be found especially useful to the practitioner in the disintegration of tumors and in paralysis.

MANIPULATIONS—PARTICULAR MALADIES.

Treatments are to be repeated as needed: acute cases every half to three hours until better; chronic cases, at first daily or oftener,—afterwards less often.

It is a mistake, sometimes made, to suppose that either pole may be applied indifferently to a diseased part, or that the direction of the current is of no consequence, or that the variety of currents here insisted on is unreal, or is a mere difference of strength. True, in the electro-muscular gymnastics, in cases of paralytic wasting, so fully elucidated by Duchenne, the individual muscles, being acted on by simple localized currents, primary or secondary, may respond to these, and as they proceed indifferently, from whatever direction; but in every other case, especially in allaying inflammation, and the correction of morbid tissue,—change resulting therefrom,—the precise rules as to poles, direction, and choice of currents, as hereinafter laid down, are of **PRIME IMPORTANCE**.

This statement must be made emphatic as to the discriminating and individualizing use of the combination battery. And just here it must be remarked, first, that every general rule herein given involves a principle of extended applicability; and, secondly, that individual cases, which are never identical, must always afford full scope for a wise and skilful variation of these general directions, in order to attain the full curative result.

The properties accredited to the several currents of this battery are to a good extent appreciable by

the senses,—*e.g.*, the action of A-C on the sensory, and of A-D on the motor tissues, etc. Much clinical experience corroborates these and other qualities ascribed to these diverse combinations, of quantity and tension, and of the primary and secondary currents.

In the beginning of electric practice it is quite possible, as in other methods of treatment, that disappointments may be met with. In every such case it will be well to reconsider the plan, and in so doing, discover the fault,—which will often be found in the scheme or execution of the treatment itself. Frequently the patient may have transgressed, and with the aid of cranial diagnosis, or otherwise, the cause must be ascertained. Consider also whether the manipulations were not of too long duration. Aggravation of original, and even additional, symptoms often proceed from this cause alone. Ten minutes, twenty minutes,—rarely over thirty minutes,—will be the proper time. Fatigue is ominous of a bad effect. The patients must not delude themselves with the idea that a long treatment is proportionately more effectual.

Treatments should be given IN THE MANNER and for the TIME directed. The battery cannot be used carelessly, without great danger.

Excessive strength of the current is to be avoided. Increasing the distance between the electrodes, light pressure, the regulation of the cylinder, control this. Generally the feelings are a good guide,—keeping outside of the limits of actual pain.

Never give treatment over the lungs (back or front) or the front of the head.

Be careful to place the strings in the posts lettered as directed, and not in others.

In no case should a treatment be given on an empty stomach, if possible to avoid it,—even eating a cracker will suffice. Attention should also be given to evacuate the bladder before the application.

A general rule is, that the currents, when not otherwise distinctly stated, are to be given “direct,”—that is, down the nerves, or downward in some other way, the positive pole above the negative; or through and through, as from the back to the stomach, or from stomach to back.

Always bear in mind that the left-hand letter as one stands facing the battery is positive to every letter below it on the right.

GENERAL TREATMENT.

No. 5 electrode from base of brain down the spine in A, No. 8 electrode on the abdomen, short point down in D, fifteen minutes. Change to No. 6 electrode across the lower part of back in A, No. 7 electrode under the feet in H, fifteen minutes.

THE RUNNING-OFF TREATMENT.

This is a most valuable treatment to be administered in chronic cases of every description, or long-continued illness, once a week in connection with the special applications.

Place No. 6 electrode across the liver (around the right side) in B, No. 7 electrode under the feet in D,

ten minutes, then change to A-D for fifteen. The foot-bath may be substituted for No. 7 electrode.

GENERAL TONIC.

Substitute E-G for A-D and D-H for A-H, and manipulate as directed for general treatment.

SCROFULOSIS.

This is to be corrected by a persistent daily treatment with the "blood-current" B-C.

First. Round electrode between the hands in B, and No. 4 electrode over stomach in C, twenty minutes.

Second. No. 6 electrode over stomach in C, No. 7 electrode under the ankles or feet in D, as strong as can be borne, twenty minutes. Use G-H current in the same manner alternate days. The vapor-bath (see directions) should be used frequently. All impurities of the blood may be benefited in a similar way.

SUSPENDED ANIMATION.

No. 1 electrode at base of brain in A (wet the hair thoroughly, as it is a non-conductor when dry), No. 6 electrode under the feet or the calves of legs in D. While the current is running, the cylinder is to be frequently and at regular intervals quickly drawn out and returned, giving repeated vibrations in this way, if the battery has no vibrator. When response is obtained, place No. 6 electrode across stomach in B, and No. 4 electrode at base of spine in D. Also F-G in the same manner. Afterwards elsewhere, if especially indicated. The time of the

application must be left to the discretion of the operator. In some instances—drowning especially—the patient is to be placed with the face downward, the electrodes fastened on with wet towels or bandages.

SHOCK—COLLAPSE.

Treat as for suspended animation, using also A-E, base of brain to the feet. In all cases, when the patient responds sufficiently to complain of coldness, apply the “warming current” C-E, as for chills.

CHILLS OR INTERMITTENT FEVER.

First. No. 4 electrode over the stomach in C, and No. 6 electrode under ankles in D or E, for twenty-five minutes, the current strong enough to be agreeable. Repeat this daily just before the chill is coming on; alternate with C and F.

Second. If stupor follows the chill, give one hour after the above treatment the following: No. 4 electrode across small of back in B, and No. 6 electrode across the liver, stomach, and spleen in D, for fifteen minutes.

Third. If nervousness and sleeplessness follow chills, use round electrode between hands in A, and round electrode in hot foot-bath in C, change to C-E same electrodes, in the same positions, for fifteen minutes in all.

CHILLS—OF ALL OTHER KINDS.

The proper currents are C-E and E-H.

First. No. 5 electrode, base of brain, on spine down-

ward in C, No. 6 electrode across the stomach in E. If a decided improvement is noted continue for twenty minutes. If, however, no perceptible effect is produced in five minutes, apply B-D twenty minutes.

Second. No. 5 electrode, base of brain, on spine downward in E, No. 7 electrode under the feet in H, twenty minutes.

Both of these applications may be completed by placing the round electrode between the hands in C, having the other electrode on the stomach or spine in E, five minutes. Apply C-G also in the same manner.

CONGESTIVE CHILLS.

First. No. 5 electrode, base of brain, on spine downward in B, No. 6 electrode across abdomen in D, until improvement in the congestion; then use C-E for B-D until normal temperature is restored. (This treatment may be continued for an hour.)

Second. If the congestion is cephalic, or of the brain, with chill, apply No. 5 electrode, base of brain, on spine downward in B, No. 7 electrode under the feet in D, twenty to thirty minutes. Use C-G also.

Third. If the congestion is pulmonie, or of the lungs, round electrode in hot foot-bath in D, No. 5 electrode from base of brain, on spine downward in B, ten minutes; change No. 5 electrode, same position, to C; place No. 6 electrode across upper abdomen in E, ten to fifteen minutes.

Fourth. If the congestion is of the kidneys, place No. 5 electrode from coccyx upward on the spine in

B, No. 6 electrode across the liver and stomach, slanting slightly downward towards the left in D, twenty or thirty minutes. (The electrode is placed in this latter position frequently to implicate the large bowel with the liver and stomach during the same application.)

Fifth. If the congestion is *gastro-enteric*, or of the stomach and bowels, apply No. 8 electrode over the abdomen in D, No. 2 electrode, base of brain in A, ten minutes; change to No. 4 electrode over the stomach in C, No. 7 electrode under the feet in G, ten minutes.

FEVER.

Slight fever from colds, etc. The first and universal aim is to "break it." This may often be accomplished within twenty minutes; rarely need it take more than forty minutes. The patient should be in bed. Then apply No. 5 electrode, base of brain, on spine downward in B, No. 7 electrode, under the feet in C, or the foot-bath, in bed (see directions), with the B-G current, may be used advantageously ten to fifteen minutes. If not better at the expiration of this time, change to B-D current, and continue until successful. In any event end with A-C current for five minutes.

If the case is not serious, allow a little respite. If local affections exist, and the case is urgent, proceed at once to treat them according to the nature of the symptoms, as directed under the appropriate heads.

Repeat these treatments as often as required by the return of symptoms, every few hours, or once

or twice a day, more or less, as in all other acute cases.

In preparing the electrodes used in the applications for fever, cloths saturated in very hot salt-water are necessary.

In some cases the following routine may be required :

First. No. 5 electrode, base of brain, downward on spine in B; No. 7 electrode under calves of legs in H. In five or ten minutes a moisture may be expected to appear on the surface of the body, and a more reasonable pulse. Then change to B-C current, ten minutes.

Second. No. 5 electrode from throat on breast-bone downward in B; No. 3 electrode between the kidneys on the spine; thus implicating organs in the current, which are often in fault, in C, fifteen minutes. This will reduce the pulse almost to the normal standard; and during the process the patient may go to sleep. The conducting strings may now be simply detached from the machine, and the sleep encouraged. On waking, or on the rise of the fever, in serious cases, as yellow fever, etc., re-attach.

Third. If the head aches after treatment, apply No. 4 electrode on the pit of stomach in D, the sponge-cup or No. 1 electrode to the base of brain in B, five to ten minutes. An extra conducting cord may be at hand in all such cases if thought more convenient, not displacing the one going to the spine, which may remain simply inert.

If any other organs are involved, the digestive system having already been acted upon, occupy a

few minutes at the close of the treatment with an application suited thereto; making in all a course of thirty minutes.

INTERMITTENT FEVER.

Treat the paroxysm (chill and fever) according to directions previously given, diagnose the local causes accurately, and proceed to treat them accordingly. The electric vapor-bath will hasten the cure, as it frequently does in many other acute and chronic diseases. If correctly managed the paroxysm seldom occurs more than once.

REMITTENT FEVER.

Treat the fever as usual, afterwards the local affections, which are rarely obscure, and lastly the general debility, so commonly its sequel. With good nursing, and such repetition of treatment as the symptoms may demand, a speedy recovery may be expected.

Malignant remittent, congestive remittent, and typho-malarial fevers require similar treatment, but more frequent repetition, in order to break up at once the morbid state. The local congestions resemble those observed in congestive chills (see directions). The difference may lie simply in the febrile heat, which, though unequal, may be high over most of the body.

CONTINUED FEVERS—TYPHOID.

Typhoid and typhus. Treat as in other fevers, then the local troubles, such as ulceration, diarrhœa,

hemorrhage, etc., as for the same maladies otherwise caused. The vapor-bath is to be guardedly employed, if needed, remembering the debility existing in these cases, and given with a mild tonic current (F-G), not to exceed ten minutes.

Ulceration of the bowels in fevers.

Apply No. 6 electrode across abdomen, just covering the navel, in B, No. 5 electrode on the spine from coccyx up in D, fifteen minutes, then, for any soreness (see note), ten minutes. Repeat once or twice a day, meeting other symptoms, if needful, at any time during the second daily treatment, but aim in every manipulation to implicate the affected parts.

Hemorrhage of the bowels in fevers.

No. 2 electrode at the base of spine in B, sponge-cup or No. 4 electrode over the right iliac region (the flank enclosing the small intestines), in C, this being the supposed origin of the flow.

The principle of this application to be observed in all kinds of hemorrhage. B-E, reversed, and F-H, however, being potent in paretic conditions of the blood-vessels.

YELLOW FEVER.

Have apartment disinfected and as thoroughly ventilated as possible. Keep the patient warm. Sponge-cup rubbed over liver and gall-bladder to the stomach in B, No. 4 electrode between the kidneys in D, fifteen minutes; change immediately No. 4 electrode over stomach in D, No. 8 electrode on the back from coccyx, long point up, in E, ten minutes; also place feet in hot foot-bath, with round

electrode in D ; sponge-cup in B, knead the bowels, fifteen minutes. The treatments must be persisted in, and perspiration induced by the use of B-H. Hot applications constantly made to the stomach and bowels, and the mouth swabbed out with a solution of chlorate of potassa. The bowels should be evacuated as soon as possible, and an enema of the white of eggs and sulphate of zinc, weak solution, administered after each movement.

ERUPTIVE FEVERS.

In all these fevers the treatment is of two parts, whose underlying principles are identical, viz. :

First. General anti-congestive.

Second. Local.

For initial chills, collapse, or convulsions, treat as in like conditions otherwise caused.

For fever, as before directed. Then,

For local affections, according to symptoms, as directed under their respective headings. The electric vapor-bath is extremely beneficial in both general and local symptoms.

SCARLET FEVER.

When the throat is very much ulcerated, a gargle should be used frequently of lemon-juice and alum, and a crumb of chlorate of potassa kept in the mouth constantly to keep the putrid condition allayed, then the treatment should be antiphlogistic.

First. Place No. 4 electrode across the stomach in B, No. 8 electrode from coccyx up, on back in D, fifteen minutes ; then remove D from back to under

the feet, ten minutes. No. 1 electrode, base of brain in A, a convenient large electrode placed under the hands in C, ten minutes. Perspiration should be induced as speedily as possible, and the body greased, thoroughly and constantly, with cocoanut oil, if it can be procured.

If the throat becomes very sore, apply the spatula electrode to the tongue in F, the sponge-cup in A, rubbed forward on both sides of the throat, five minutes each side.

Treatments every hour until change for the better, unless the patient sleeps. Quiet, and an even temperature, *must be observed* in the apartment of patient. Children in household kept out of the room, and sanitary measures taken to prevent contagion.

MEASLES.

When the first symptoms, watery eyes, rasping cough, and fever, appear, regulate the temperature of the room to about seventy-five degrees, avoiding draughts.

Place No. 1 electrode to base of brain in B, and No. 5 electrode on the lower part of spine in C, fifteen minutes; then place No. 1 electrode on throat in A, and No. 6 electrode under feet in C, strong enough to be felt by patient, fifteen minutes. Repeat this treatment three times daily. Alternate with B-D and C-E in the same manner.

CATARRHAL FEVER.

First. The electric vapor-bath with A-D current, administered as usual, which may dispose at once of

the whole trouble. Repeat once daily. If any local affection remains treat accordingly, at another period of the same day, extending intervals as improvements go on.

Should the pyrexial (feverish) symptoms be very severe, supersede the above with the treatment suited to them.

RHEUMATIC FEVER—ACUTE RHEUMATISM.

If the fever-symptoms are present, reduce them as already directed. The more conspicuous troubles are then to be treated without exhausting the patient by a too lengthy and continuous manipulation. Therefore, after sufficient rest, a careful diagnosis should be made, to determine the existence or not of visceral lesion, particularly of the heart and the liver. Such lesions, when ascertained, are next to be dealt with, as indicated from time to time.

In this affection, one is easily tempted to do too much at once, as each affected region successively seems to demand full treatment; and it will therefore be all-important to proceed with patience, and frequently to recur to such general treatments—tonic or soothing—as may be indicated; or even to give antidotal currents in reverse, avoiding a direction from badly-affected joints, etc., to the central vital organs. Nourishment must also be cared for. Neglect of dietetic measures is certain to lead to bad results, not only in this disease, but in all others. The physician who is guilty of it will soon find himself disgusted with electro-therapeutics.

Manipulate rheumatism of the upper extremities as follows :

First. D, round electrode, in a basin, with the hands immersed, or, the hands laid on a prepared electrode, on a rubber cloth on the knees or elsewhere, according to convenience; B, in sponge-cup, to be moved repeatedly over the affected region, always downward, twenty minutes. Repeat as needed. After three such treatments, in a bad case, it will be required to use A-D in like manner, for the last half of the time of each manipulation; ten minutes being a fair time for each limb. Alternate with

Second. No. 5 electrode on spinal column between shoulders in B, and No. 6 electrode across liver in D or G, for twenty minutes; then take No. 5 from the back into the hands for ten minutes longer.

The lower extremities are to be treated in a similar manner; the feet resting on a large electrode, or in a foot-tub, with the electrode immersed.

The spine may be treated, if involved, thus:

Third. Place a sponge containing electrode at the coccyx, or held for the upper spine in the hands in D; No. 5 electrode on the spine, extending over the affected region in B; or, if necessary, use the sponge-cup, moving from above downwards repeatedly, fifteen to twenty minutes; or No. 4 electrode across small of back in B, and No. 7 electrode under feet in D, for twenty-five minutes; then change to A-C for ten minutes; also use D-F, or E-G currents.

CHRONIC RHEUMATISM.

(See *Affections of Joints.*)

Lumbago, Myalgia, Muscular Rheumatism, etc.

B-D, fifteen minutes; A-D, ten minutes; varying, if much tenderness, with A-C. Negative, applied to the coccyx, the hand, or the foot. Positive, in sponge-cup, moved downward over the affected part, avoiding the lungs. Use the electric vapor-bath frequently.

The SILVER HELIX current is most beneficial in all rheumatic affections, and should be applied with the brush (see diagram) in the negative, stroking downward, and always away from the vital organs. The positive,* placed in a proper position as dictated by good judgment in accordance with the location of the pain. A five or ten minutes' treatment with this current may be used daily in conjunction with any of the preceding ones directed for this disease.

SCIATICA.

Treat with the same currents as in acute rheumatism, varying the manipulations so as to operate mainly on the tract of the affected nerve and its distributions, and using the electric vapor-bath frequently. In all of these diseases treat the complex symptoms met with in the order of the severity of the distress to which they give rise.

* The posts of the SILVER HELIX are only lettered P for positive and N for negative.

NUMBNESS AND HEAVINESS OF THE LEGS.

No. 6 electrode over one hip, then the other, ten minutes each in B. No. 7 electrode under the feet in D, twenty minutes. Also use D-F in the same manner.

CEREBRO-SPINAL MENINGITIS—SPOTTED FEVER.

Treat for chill and fever as usual.

First. No. 5 electrode from base of brain down the spine in B, round electrode covered with sponge pressed against the coccyx in E, fifteen minutes.

Second. No. 2 electrode at base of brain in B. No. 5 electrode on spine, from coccyx extending up in C, twenty minutes; every second day, if practicable, administer vapor-bath—not too hot, or too long—with round electrode in D in the foot-bath, sponge-cup in A from base of brain down the spine.

SEVERE INFLAMMATIONS IN GENERAL.

Inflammation must be rapidly overcome by the use of the proper currents mildly administered, usually more or less complication may be expected; in which case the several symptoms must be successively or, if practicable, simultaneously met.

Thus, for example, we will suppose a bad case of dyspepsia, with hæmorrhoids, to be aggravated into a violent inflammatory condition. The typical course of treatment for such a case would be, as usual, to attack the most distressing part first. Proceed thus:

First. Introduce the rectal electrode well lubricated with glycerine or fine soap (as all similar

electrodes should be) into the rectum in E, No. 4 electrode on the small of back in B, ten minutes, to reduce the piles.

Second. No. 8 electrode over abdomen in G, No. 4 electrode on the small of back in B, ten minutes, the cloths being wet in water as hot as can be borne. B-H may be used instead of the preceding current in most severe cases.

Third. No. 4 electrode on the small of back in E, No. 5 electrode from breast-bone downward in B, ten minutes. C-G may also be used, same electrodes and same positions. Then rest, repeating as often as soreness* or aggravating symptoms recur.

SLEEPLESSNESS.

For sleeplessness, the electric vapor-bath will prove most efficacious, or lacking this, when organic affections are not the manifest cause, use the following treatment: sponge-cup or No. 5 electrode from base of brain downward in B, No. 6 electrode under the knees, or across loins below kidneys, in E, fifteen minutes. A more simple method is from the base of brain in A, to the hands in C, fifteen minutes.

NERVOUSNESS.

Although a mere symptom, this often renders individuals who may suffer from diseases of varied char-

* If, after electrical treatment, IN ANY CASE SORENESS APPEARS TO HAVE BEEN INDUCED, a few minutes' treatment with A-C current,—usually applied A, base of brain, or on upper part of spine,—C across abdomen, or lower part of spine, or to the feet, with suitable electrodes, will antidote it.

aeter exceedingly uncomfortable, and is thus prejudicial to speedy recovery. It may appear as local or general irritability, or may even be a product of active electrization, disturbing the functional equilibrium. In such cases use round electrode in A between the hands, No. 6 electrode over stomach in C, five to fifteen minutes. Any faulty electrization should of course be remedied, either by changing to the proper current or different locations.

If a child is cross and irritable, place No. 5 electrode on spine from the base of brain downwards in A, and No. 7 electrode under feet in B, ten minutes, change B to hands five minutes. Irritability in adult, A-C instead of the preceding current, five or ten minutes longer duration. In abdominal discomfort, No. 5 electrode on spine from waist up in D, No. 6 electrode across abdomen in B, ten minutes, in either case end with A base of brain, C in hands five minutes.

VERTIGO.

The cranial diagnosis will enable the physician to proceed with confidence. The cause of this trouble is frequently gastric derangement, or it may be due to cerebral or other nervous affections. If gastric, treat as for dyspepsia.

If cerebral, place

First. No. 5 electrode on spine from base of brain downward in B, No. 6 electrode over stomach, liver, and spleen in D, ten to fifteen minutes, remove No. 6 electrode to hands five minutes, alternate with

Second. No. 5 electrode on spine from coccyx up-

ward in A, No. 6 electrode across abdomen in H ten minutes, then remove No. 6 electrode to under the feet or ankles ten minutes. By this treatment the pressure of the blood will be removed from the head and circulation equalized. A vapor-bath once or twice a week may often prove beneficial for the same purpose. Frequent use of these treatments will be found necessary until improvement becomes marked.

STUPOR.

If in a child or very nervous person, use No. 2 electrode the base of brain in C, No. 6 electrode in F under the calves of legs or the feet ten to fifteen minutes. If in a usually robust adult, A-E in the same manner.

HEADACHE—NERVOUS, GASTRIC, ETC.

Nervous headache.

First. Apply No. 2 electrode the base of brain in A, round electrode between the hands in C, ten to fifteen minutes. After two or three treatments, which may be taken hourly, apply

Second. No. 5 electrode on the spine from base of brain downward in E, No. 4 electrode on lower part of spine in G ten to fifteen minutes. If nervousness of the lower limbs remains, run this same current from the lower part of back to feet for a few minutes.

If very decided soothing measures be demanded, and especially if *sleeplessness* be a prominent complication, give special attention to it by using,

First. No. 5 electrode on the spine, from base of

brain downward, in A, No. 7 electrode under the feet in C, ten or fifteen minutes.

Second. No. 6 electrode across the epigastrium in C, No. 4 electrode on the spine, small of back, in E, ten to fifteen minutes, transfer C to round electrode, held between the hands five minutes.

Abbreviate if not needed in full. Be sure, in all cases of visceral disease, to "implicate" in the flow of the current the morbid organs.

Many cases of nervous headache need only twenty minutes' treatment, half the time from base of brain to the feet, then base of brain, to the hands.

The practitioner, always aiming at a radical cure, should seek the cause, and remove it. Headaches, as a rule, are not a disease.

SICK HEADACHE.

Treatment should rarely begin at the head, but rather address the stomach.

First. For relief. No. 2 electrode lower end of breast-bone in B, No. 4 electrode across lower part of back just below the waist in D ten minutes, transfer B to base of brain five minutes.

Second. (See general treatment.)

For radical cure, treat daily for one week according to the preceding directions, then vary, as follows:

First. No. 2 electrode base of brain in B, No. 4 electrode small of back in D, twenty minutes, then transfer D to the hands five minutes.

Second. No. 4 electrode over the stomach in A, No. 7 electrode under the feet in D, ten minutes;

change A to E, and D to G, ten minutes. Alternate and change the treatments with discretion.

Where the sick headache is constitutional, the vapor-bath can be used with great benefit twice a week, applying the electricity over the liver and spleen, always manipulating below the true ribs, so as to avoid the lungs.

Temporary relief from headache. The round electrode in A held in each hand alternately. Holding the sponge-cup in the disengaged hand at the base of brain in C or D as can be borne, stroke slowly from three to five minutes up the back of the neck, on either side or centre, the hair at the base of brain being thoroughly wet. The treatment may be administered by an operator, the patient holding the round electrode between the palms of the hands.

Another very successful treatment for headache is as follows: No. 5 electrode on back of head, an inch or two over the growth of hair, which must be wet, down the back of neck and spine in C, No. 6 electrode across liver and stomach in E, as strong as can be borne with comfort, twenty minutes.

For persons subject to frequent headaches this will be found most successful, and should be used on recurrence, in connection with the daily treatments indicated by the condition of the patient.

Another treatment: No. 3 electrode from hair down spine in D, No. 4 electrode lower end of spine in F, fifteen minutes. If the patient is extremely nervous and sleepless, transfer F to a foot-bath for ten minutes longer. If the headache arises from the

stomach, No. 4 electrode across the stomach in C, E in foot-bath.

ELECTRIC FOOT-BATH.

This method is attended by very favorable results in many complaints, such as headache, rheumatism, and kidney disease, of a stubborn character and long standing. Place No. 6 electrode across the liver, stomach, and spleen in A, round electrode in the foot-tub with D, twenty to twenty-five minutes, the water as hot as can be borne, with about half a tea-cupful of salt. B-H current in the same manner.

FOOT-BATH IN BED.

The patient must lie on the back with the feet drawn up, so that the foot-tub when placed in bed will be directly under the bend of the knees. Place No. 6 electrode across the abdomen in B, round electrode in D in the water, which should be very hot and salt. This will be found a most efficacious method of inducing perspiration in severe colds and in fevers.

INTEMPERANCE.

In whatever state the man or woman is in whom the passion for drink has grown to be a habit, invariably the stomach is either in a condition of inflammatory fever or partial paralysis. In these attending states of misery the alimentary canal, covered with poisonous canker, offers continually renewed promptings to drink. In the author's experience with such cases the following treatment has proved almost infallible:

Place No. 4 electrode up and down over stomach in B, and sponge-cup pressed against base of brain in D, ten to fifteen minutes, strong as can be borne; change from base of brain to between the hands five minutes, not too strong, alternate with E for B, and H for D, electrodes to be placed as above. Let the patient eat dry cracker during treatment, and carry crackers to eat whenever thirsty. At meals drink little or no water, but take a cup of strong coffee, sweetened to taste, but without milk. Eat bread toasted very brown, and abstain from every drink but coffee. Continue treatment twice daily for seven or eight days until strength is felt in the personal resistance, then less frequently until cured.

NARCOTIC POISONING.

An emetic should be administered. If vomiting is not induced in five minutes, place No. 4 electrode directly on pit of stomach in A, No. 5 electrode below the lungs on spine in D, vibrating the cylinder until successful. Then place an electrode at lower end of spine in C, and one between the hands in A, five minutes.

If symptoms of sinking or faintness occur, place A at base of brain and E at feet, and prevent the patient sleeping. Send for physician immediately.

CHRONIC NARCOTISM.

In these cases the blood requires most persistent treatment.

First. No. 1 electrode around the front of throat in B, No. 2 electrode at the coccyx in D, fifteen

minutes, complete the treatment by removing the electrode in D to pit of stomach, ten minutes.

Second. Every alternate day a running-off treatment (see directions), or electric foot-bath with No. 5 electrode base of brain on spine downward in B, round electrode in D in the foot-tub, ten minutes; then remove B from back, and place No. 6 electrode over liver, stomach, and spleen in A. D remaining in the water (which should be kept hot) ten minutes longer.

Third. No. 5 electrode on the spine from the waist upward in D. No. 6 electrode across lower abdomen in F, twenty-five minutes.

Fourth. Vapor-bath, adding A-C, for nervousness, within an hour, which also prevents taking cold. (Time should be taken after any bath, for the temperature of the body to become assimilated to the surrounding air, before going abroad.) Apply from hands to the middle part of spine ten minutes.

POISONED WOUNDS.

Poisoned wounds should be treated in the same manner as ulcers. (See directions.)

The Bites of Rabid Animals.

First. No. 5 electrode girdling the body or limb above the wound in B, the sponge-eup in D, rubbing down to and off at the wound twenty minutes; then A-D, ten minutes.

Second. Use G-H and A-D in the same manner, the patient may, if able, manipulate the treatment of the limb, if an upper limb, by holding the round electrode in the hand of the injured side in the nega-

tive, stroking the sponge-cup in the positive, from the shoulder down to the wound. If a lower limb, place the negative under the feet, or in a foot-bath, stroking with the sponge-cup in the positive from the hip down to the injury, ten minutes.

Third. The vapor-bath. Repeat treatment every half-hour, or as needed, until the effect of the poison is neutralized. (See Antidotes, in Appendix.)

Another course of treatment :

First. During the paroxysm, treat as for epileptic convulsions—with A-D and A-E currents.

Second. If the patient be clammy, administer the vapor-bath, using C-E instead of the usual current.

Third. B-D, positive, from the base of brain or the muscles and viscera most involved ; negative, to the electricity, with a large sponge.

Fourth. For nervous excitability, No. 2 electrode base of brain in A, No. 4 electrode on lower part of spine in C, or to the hands if a less extensive influence is required. Three or four treatments at short intervals should be given before any improvement may be expected.

For a Snake-bite, wash in tobacco-juice, and treat similarly.

MINERAL AND IRRITANT POISONINGS.

In some respects, the treatment resembles that for narcotic poisoning, but the manipulations should consume a longer time. Strong emetics and chemical antidotes should not be neglected.

First. For the resulting soreness and inflammation,

A-C; or if the surface is cold, C-E and E-G, applying either alternately fifteen to twenty minutes. No. 2 electrode base of brain in C or E, No. 5 electrode from breast-bone downward over stomach and navel, or on the spine from coccyx upward in E or G twenty to twenty-five minutes. The vapor-bath should be administered.

Chronic symptoms. Use the same currents, also No. 2 electrode base of brain in A, No. 4 electrode on stomach in H fifteen minutes, then No. 1 electrode around the front of throat in A, No. 7 electrode placed on a stool or chair for the patient to sit upon, in F ten minutes. Every second day vapor-bath or electric foot-bath A-D current. This treatment presupposes organic lesion. If only soreness or coldness is present, use the proper currents as directed. Any local developments should be treated intermediately.

NEURALGIA AND TOOTHACHE.

If in the face, No. 1 electrode at base of brain in C, the sponge-cup stroked backward or downward over the face in E, or the current may be given through the operator, using the hand instead of sponge-cup. If no better in five minutes, change C to A, and E to C, for five minutes. Applications may be made at intervals of half an hour.

If twitching pains, give E-H.

If jumping pains, give A-C, afterward C-E.

If the teeth feel sensitive and the gums are inflamed, use spatula in the mouth in G, No. 2 base of brain in C, five minutes.

If pus form, B or G near it outside; D or H upon

it inside, to hasten pointing and discharge. This effected, heal with the aid of C-E; the negative on a wet napkin over the suppurating region, the positive above it.

HYSTERIA.

A careful (cranial) diagnosis is first to be instituted, that the real foci of morbid action may be detected, and treated without delay. One of the most frequent causes of this painful disorder is derangement of the generative organs. Mechanical displacements demand the first consideration. Congestions menstrual, digestive, or spinal will also need care.

For the relief of the paroxysm.

First. No. 5 electrode base of brain down spinal column in A, No. 6 electrode across liver, stomach, and spleen in D, quite strong, ten minutes, then No. 1 electrode base of brain in A, No. 6 electrode under the hands in C, ten minutes. After a few minutes' rest, if the patient is no better, use

Second. No. 8 electrode on lower part of back, long point between the kidneys in E, No. 6 electrode across the abdomen or under the feet in A, ten minutes. When the paroxysm contracts the trachea, the electricity may be passed through the operator, using C, and placing No. 2 electrode at base of brain in E. Great firmness is necessary in the management of the patient, and the operator's composure will be reassuring and of more benefit at first than the hurried application.

CHOREA.

Much of the treatment for this affection consists of reversed currents. Here, too, various local troubles demand special attention from time to time. The local treatments should be given as follows.

In all nervous diseases the kidneys must receive especial attention, as their action is always faulty, and actual congestion of the kidneys and stomach a *sequelæ*.

First. No. 4 electrode, upper part of stomach, to implicate the œsophagus, in B, No. 6 electrode across the lower part of abdomen (the bladder is affected by this) in G, ten minutes.

Second. No. 6 electrode across upper part of abdomen, over the navel, in D, No. 5 electrode between kidneys, on spine, in B, ten minutes.

Third. Every fourth day an electric foot-bath should be administered in the usual way.

If any acute symptoms arise during the course of treatment, five minutes may be added to the length of the application in which to treat it.

Loss of appetite may be treated as for dyspepsia. (See directions, second treatment.)

Stuttering, dumbness, and similar affections, apply No. 1 electrode to base of brain in C, No. 2 electrode, or the operator's hand, may be used around the muscles and nerves of the throat in A, ten minutes, E-G and E-H currents also.

The special symptoms being duly cared for, proceed with the chorea proper, varying the process thus:

First. The patient should lie upon the back. No. 5 electrode from the base of brain on the spine downward in C, No. 6 electrode under the calves of the legs in A, for ten minutes; then remove No. 5 electrode from the base of brain and place it across the stomach (to implicate the diaphragm) ten minutes.

Second. No. 5 electrode between the shoulders, on the spine, downward in H, No. 6 electrode across the lower abdomen in E, fifteen minutes; then remove No. 6 electrode in E to the feet for ten minutes.

The round electrodes held in the hands, in E-G, five minutes; can be used to complete either of the preceding applications.

Third. No. 6 electrode under the calves of legs in E, No. 5 electrode from coccyx up between the kidneys in H, ten minutes. Transfer No. 5 electrode to base of brain, on spine downward, in A, No. 6 electrode to under calves of legs in C, ten minutes. Transfer No. 6 electrode in C to under the hands five minutes.

Fourth. The vapor-bath, with No. 7 electrode placed under the towel on the seat in D, round electrode in the foot-bath in A, first having applied the sponge-cup down the spine in B in the usual way.

Two or three hours after the bath use No. 3 electrode between kidneys in E, No. 2 electrode on the upper part of the spine, below the back of neck, in G, fifteen minutes.

Repeat the direct applications for a child every day, for an adult twice a day, until better. Local affections may be treated in the interval.

CONVULSIONS—EPILEPTIC, INFANTILE, PUERPERAL,
HYDROPHOBIC, TETANIC.

Epilepsy proximately depends on unbalanced circulation, this being due to pressure somewhere, in the cerebro-spinal or other nervous tissue, even upon the cerebro-spinal mass itself, as in the region of the foramen magnum, or elsewhere, in the form of indurated tissue, usually below the medulla oblongata, impeding its free movement in the canal.

The first effort must be to dispose of this collection of morbid matter. The second effort to correct a multitude of local troubles, which are liable to concur with the main affection, especially of the throat, bronchi, nasal passages, and stomach, all of which seem to get better or worse as the general malady changes.

During the spasm, apply No. 2 electrode to base of brain in A, No. 6 electrode on the soles of the feet very hot in D, as strong as the operator's judgment dictates, until patient seems better. Change A to No. 4 electrode, and place between the hands; or if the patient is incapable of holding it, apply instead from the lower part of breast-bone, twenty minutes; follow in half or three-quarters of an hour with A-C, or C-E, in the same way; the former, if the surface generally is warm; the latter, if cold, especially the extremities.

Chronic epilepsy :

First. Seat the patient on No. 7 electrode in G, sponge-cup to be rubbed from base of brain to end of spine in E, ten minutes; change to A-D current ten minutes longer.

Second. Patient recumbent, No. 5 electrode on spine from waist upward in G, No. 6 electrode across the liver, stomach, and spleen in F, ten minutes; change No. 5 electrode in the same position to A, No. 8 electrode on the upper abdomen, the long point extending up to the breast-bone in D or H, ten minutes longer.

Frequent application of A-C from base of brain to the hands, or the round electrodes, held one in each hand, will be found most beneficial.

The electric vapor-bath is highly commended after the third daily treatment, and should be administered very light the first time. Alternate these treatments, giving special attention to the general health.

Convulsions (infantile). The application should be made through very hot wet compress, placed on the stomach and abdomen.

If the child is teething, No. 3 electrode from base of brain downward in C, No. 4 electrode across the abdomen over the navel in G; if the convulsion does not seem to yield in five minutes, change No. 4 electrode to the upper part of stomach from the breast-bone downward, ten to fifteen minutes longer, making the compress hotter at the same time. After the spasm is subdued, treat as for inflammation of the gums. (See directions, Neuralgia and Toothache.)

If other causes than teething be found, treat accordingly. (Compare Epilepsy.)

PUERPERAL ECLAMPSIA.

(Convulsions during Pregnancy.)

Treat as for epilepsy, until the convulsion and cerebral congestion subside; then:

First. Apply No. 4 electrode small of back on the spine in B, No. 6 electrode across upper abdomen in D, twenty minutes.

Second. No. 6 electrode over the abdomen from stomach downward in F, No. 5 electrode from coccyx upward on spine in D, twenty minutes. Alternated daily or during recurrence of spasm.

HYDROPHOBIA.

Treat as for convulsions. (See directions, Bites of Rabid Animals.)

TETANUS.

(Lockjaw.)

First. Apply No. 5 electrode base of brain, on spine downward, in D, No. 6 electrode from breast-bone downward, over abdomen, in A, twenty minutes. Change A to the sponge-cup, stroke around the jaw, commencing under the ear, five minutes each side.

Second. No. 2 electrode the base of brain in F, No. 4 electrode in the hands in D, ten minutes. Change D to sponge-cup, and stroke around the jaw, as in the preceding treatment, ten minutes.

Third. Apply C-E, warming and soothing as for shock and chills. (See directions.)

PREVENTION OF MISCARRIAGE.

The author has met with remarkable success in carrying women beyond critical periods of gestation, which, previous to treatment, had always proved fatal to the foetus, using the following applications :

First. No. 6 electrode across the lower part of back in E, No. 8 electrode very low on the abdomen, short point downward in C, twenty-five to thirty minutes.

Second. No. 4 electrode on the upper part of the stomach in B, No. 5 electrode between the kidneys on spine in D, ten minutes (to prevent vomiting).

Third. No. 6 electrode across the lower part of the back in A, No. 8 electrode on the abdomen, long point on the stomach in D, twenty-five to thirty minutes. Alternate daily first and third treatment for six weeks before the critical time, and through the month, then twice a week will be sufficient until confinement, unless complicated symptoms arise. When immediate miscarriage seems imminent from some sudden injury, the patient should assume a recumbent position immediately, and suitable electrodes in size and form selected, one applied over the part injured in B, the other above the injury in D, twenty-five minutes or longer, if required. Conclude the treatment with No. 2 electrode at the base of brain in A, No. 6 electrode under the hands in C, five minutes longer, then follow the previous directions.

LABOR ASSISTED.

During the pains No. 5 electrode across upper abdomen in A, the sponge-cup pressed against the

pubic region, or No. 6 electrode across lower part of back in D. Used through term of delivery. After delivery use No. 7 electrode across abdomen in G, No. 8 electrode from coccyx, long point upward, in A, thirty minutes. Use C-E current to soothe and A-C current to restore proper nerve action.

APOPLEXY.

First. Apply No. 5 electrode base of brain downward on the spine in A, No. 6 electrode lower limbs or feet in H, until consciousness returns; then use B-C current in the same manner for fifteen minutes.

If froth appears at the mouth, a gastric complication may be inferred; then apply No. 6 electrode over the liver, stomach, and spleen in B, No. 4 electrode across lower part of back in D, twenty-five minutes. If simply a moist mouth, run the same current B base of brain D, in the hands.

Manipulate with the several directions given, using the current quite strong, and timing them very much by their effect.

After the more urgent apoplectic symptoms are subdued, the patient may remain more or less paralytic, when the following treatment is to be pursued, not forgetting to guard against the congestive effects sometimes wrought by reversed currents, yet not being thereby deterred from their careful and therapeutic adjustment and use:

PARALYSIS.

In paralysis, whether general or partial, after the acute symptoms are improved, the first step is to

ascertain if any lesion exists, and endeavor to overcome it. In doing this it will suffice to alternate the treatment of the paralysis with the following:

For the lesion :

First. Nos. 4 or 5 electrode as indicated by the position in which it is to be placed, which should be below the organ or part requiring treatment, connected with the positive post of the SILVER HELIX, the sponge-cup or brush stroked gently and quickly over the affected part toward the electrode below connected with the negative post fifteen minutes.

Second. Apply D-F and F-H currents in the same manner.

Third. The vapor-bath, or electric foot-bath, should be administered at least once a week with the usual current.

Paralysis proper concerns the nerves of motion, of sensation, of nutrition, and other organic functions variously ; in other words, all the nerves of animal and of organic life, with the corresponding muscles and organs of sense. The special symptoms present such features as belong to the particular nerve-regions involved.

The treatment here recommended is scarcely to be put in comparison with the old method of galvanism, which is extensively handled in nearly all works on medical electricity, as the currents of the combination battery differ from all others in the qualifications effected by the peculiar arrangement of the helices.

For all forms of paralysis two general rules are to be observed :

Rule first. The currents are most effective when broken at regular intervals by hand or by mechanism. Those not having batteries with the rapid vibrator, or Flemming's slow interrupting rheotome, can produce the desired effect by the cylinder, which may be at regular intervals suddenly drawn out and returned, thereby causing slight shocks and functional responses.

Rule second. The currents are usually to be given REVERSED.

The application may be general, of the whole body or a limb, or local, of a single nerve or muscle. In the last case the nerve is isolated at some superficial portion of its course, the sponge-eup being placed here; the other electrode at its distribution; or the electrodes are placed at opposite ends of a single muscle, or very small discs may be placed at short distances, upon successive portions of its extent. Electric gymnastics effect much in stimulating nutrition of wasted parts, and in the restoration of functional activity, with A-C and D-F.

The patient must be exhorted to constantly repeated kinesipathic or other voluntary motions, directed to the paralyzed parts. On the other hand, whatever part is affected, the first evidence of returning power is often a serious temptation to exhaustive effort, which is injurious, and the danger of which must never be lost sight of. Furthermore, the patient often becomes inattentive to treatment when a fair amount of improvement has been effected, but may be confidently assured that during long intervals of treatment improvement is stationary. The

applications must be regular, until complete restoration is effected.

Having already given the points for localized treatment, it remains only to give those for a whole limb or other region. If in the upper part of the body, the cheek, tongue, larynx, arm, or hand, apply along the paralyzed tract the negative with the brush, sponge-cup, spatula, or the operator's hand; place the positive upon the roots of the corresponding nerves, in the spine, graduating the current to the electro-sensibility and electro-contractility of the patient, using the SILVER HELIX, or A-C, E-F, and F-H currents, ten or fifteen minutes, or until some slight sensation or motion is perceptible, administering frequent but not very long applications of this kind, never over twenty minutes.

If the parts are deficient in animal heat, use C-E current from the base of brain to the throat, or the hands.

Paralysis of the lower extremities is to be managed on very similar principles, if no visceral paralysis, as of the bladder, rectum, or anus, is present. Often, however, it coexists, owing to lumbar or other injury.

For this apply No. 6 electrode or the brush along the perineum in F. The sponge-cup upon the nerve-roots in D, vibrating as directed, for fifteen or twenty minutes. Or, if the sphincters are particularly affected, introduce the rectal instrument into the rectum, or the rubber insulated bladder electrode to the neck of the bladder in A, No. 5 electrode on the spine between the kidneys in D, five or ten minutes' treatments, alternate days.

For the lower limbs. Apply No. 7 electrode under the feet, in the positive, the brush to be stroked upward in the negative, attached to the SILVER HELIX, ten or fifteen minutes each leg, or until some slight response is received; then place No. 4 electrode across lower part of back in the *positive*, No. 7 electrode still under the feet, in the *negative*, five minutes longer; A-C, D-F, and F-H currents may be used in the same way, the arms or any portion of the body treated in a similar manner. The vapor-bath is highly efficacious administered twice a week. Particular attention should be given to the circulation.

MYOGRAPHIA—SCRIVENER'S PALSY—WRITER'S SPASM.

The cause of this distressing malady is indicated by its name,—*i.e.*, an overtax upon the nerves and muscles brought into play whilst writing. And the old notion that it originated because the writer used steel pens, and that the metal was the cause, has been exploded; the true cause is an overtax, and the treatment should be addressed to the cervical nerves and general stimulation of the entire cerebro-spinal system in the following method:

First. No. 5 electrode from base of brain downward on the spine, implicating the cervical nerves in C, No. 4 electrode from coccyx upward on the spine in A, ten minutes; change No. 4 electrode to the affected hand in C, No. 5 electrode on the upper part of spine in F fifteen minutes.

Second. The brush may be used effectually to excite cutaneous action, brushed up the arm in H,

No. 5 electrode on the spine as before, in F, ten minutes,—daily treatment.

LOCAL CONGESTIONS, INFLAMMATIONS, AND ALLIED DISEASES.

INFLAMMATION OF THE BRAIN.

First. Wet the hair of the patient so as to make it conduct the electric current to some extent. Keep the fingers of the right hand thoroughly wet, so as to manipulate the head, running them under and through the hair, and much of the time moving about, as in the rubbing of tonsorial shampoos, from the frontal region all over the head, except the base of the brain, where No. 2 electrode is placed in C, the sponge-cup held in the operator's hand in A, three to five minutes each application.

Second. No. 5 electrode base of brain, on spine, downward in B, No. 6 electrode across the liver, stomach, and spleen in G, twenty to twenty-five minutes.

Third. No. 5 electrode on the spine from the waist upward in A, No. 7 electrode under the feet, or the round electrode in the foot-bath in D, fifteen minutes.

Fourth. No. 4 electrode small of back in B, No. 6 electrode under calves of legs in D, fifteen or twenty minutes. Use C-E current from base of brain in the positive, to the hands in the negative, five or ten minutes to complete either of these treatments.

The applications may be repeated every two hours in severe cases.

Special attention should be given to any new symptoms arising, and local treatment administered.

AFFECTIONS OF THE EYES.

Disordered vision.

First. Place the round electrode in the hands of the patient in A, the sponge-eup on the eye or eyes if both are affected, in C or D, very mild in strength (using A-C current for sensory, and A-D current for motory affections).

Second. Wet the hair at the back of the head, and use a sponge-eup or cylinder electrode enclosed in a sponge at the base of brain in C, stroking upward an inch or two on the head, using the current strong enough to produce a lifting sensation in the scalp, a sponge-eup held by the patient with a light pressure on the eyes alternately in D, three to five minutes each eye.

Weak eyes. In weakness of the nerves or tendency to paralysis of the nerves,

First. Apply sponge-eup lightly on the eye, rubbing outward in A, No. 3 electrode back of the neck on the spine in C, not strong enough to produce pain.

Second. Alternate this every other day with F-H current.

Conjunctivitis.

First. The eye-eup filled with warm water or milk (the face must be held downward; the eye may be opened in the eup) in C, No. 2 electrode or the sponge-eup at the base of brain in B, five minutes. If both eyes are affected, change the water, rinse the cup, refill it for the other eye, and apply as before.

Second. Use C-E current in the same manner.

Third. No. 3 electrode back of head on spine in E, the round electrode between the hands in F, five minutes, to conclude either of the preceding applications when the inflammation is almost cured.

A nursing infant may be treated while at the breast; the mother holding the positive in her hand; the operator the negative, with soft sponge electrode, with which the eye is to be gently sponged.

Lachrymal obstruction. Manipulate as for nasal catarrh. (See directions.) In obstinate cases the small olive or disc may be applied as closely as possible over the tear-sac in C, the nasal electrode within the nasal passage in D, five minutes; then A-D current five minutes, *very mild*. If soreness supervene, substitute A-C current and C-E current until it is subdued. Other variations will occur to the mind of the expert. If, for instance, the obstruction be evidently low in the duct, the negative may be applied with the nasal electrode, and the positive at the base of brain a judicious length of time.

OTITIS—EARACHE.

For applications to the ear, a speculum-electrode of hard rubber is preferred, at the end of which is affixed a small bit of fine sponge, to be protruded after introduction into the external passage; and, not till then, attached to the battery.

Ear-speculum in D, No. 2 electrode base of brain in B, mildly, twenty minutes; substitute C-E current if soreness appears, until relieved.

Gathering in the ear.

Syringe twice a day with warm water, holding the

ear downward. Then insert the ear-speculum as before directed in B, No. 3 electrode around the side of the neck nearest the affected ear in A, five minutes; change, placing the sponge-cup over the ear in E, No. 2 electrode base of brain in B, five minutes. Repeat as required, using C-E (soothing) current occasionally.

Deafness.

The treatment for nasal catarrh may be indicated—or that for chronic tonsillitis; besides which, for the ear-tissues themselves, follow the preceding directions: also ear-speculum in B, No. 5 electrode base of brain downward on the spine in D, seven to ten minutes, very mildly.

NASAL CATARRH.

If dry catarrh, treat thus:

First. Sponge-cup on bridge of the nose in B, No. 5 electrode base of brain downward on the spine in D, five minutes; change to No. 1 electrode around the front of throat in A, No. 4 electrode across stomach in F, ten minutes.

Second. The operator holding an electrode in the left hand, may place the thumb and forefinger of the right hand on the upper part of the nose between the eyes in A, No. 3 electrode on the breast-bone in D, five minutes; change to No. 2 electrode base of brain in A, an electrode between the hands in C, ten minutes.

A new treatment which recent trial has proved most beneficial follows:

Third. No. 3 or No. 5 electrode back of neck from

the hair downward in D. Sponge-cup in C, resting half a minute on bridge of the nose, and then stroked over the eyes outward, keeping the sponge under the arch of the brow, five minutes each eye. Conditional, on extension of the catarrh to the throat, complete the treatment with the sponge-cup stroked around the throat and downward over the breast-bone in B, No. 4 electrode small of back on the spine in D, ten minutes.

Fourth. Conditional, on the anterior passages being the principal seat of disease, use the nasal electrode therein, with E, No. 2 electrode base of brain in C, five or ten minutes.

Nasal polypus.

First. To induce a discharge use the bodkin similar to the nasal electrode with a sponge wrapped and tied around the end, applied within the nasal passage to the polypus in II, No. 2 electrode base of brain in C, ten minutes. Alternate with A-D current ten minutes in the same manner.

Second. After two or three applications a fine silver wire may be placed around the polypus in D, A at the base of brain ten minutes; the tumor will probably become detached during the second or third application; when it discharges, use No. 2 electrode base of brain in A, sponge-cup base of nose, between the eyes, in D, ten minutes.

Bleeding of the nose.

The round electrode or sponge-cup between the hands in A, No. 1 electrode at the base of brain in C. If not relieved in five minutes change to E-F current, holding the hands over the head.

TONSILLITIS, PHARYNGITIS, ETC.

First. The spatula electrode covered with a wet cloth on the centre of the tongue in D, No. 1 electrode around the back of neck in B, ten minutes. Repeat as required, once a day at least during acute attacks; then,

Second. Sponge-cup on the front of throat in C, No. 3 electrode on the breast-bone in D, ten minutes. If the throat will not tolerate the sponge-cup, the operator's hand may be used instead.

The vapor-bath frequently administered at first affords great relief and hastens the cure.

SORE THROAT.

Sponge-cup or No. 1 electrode base of brain in B, No. 2 electrode front of throat in C or D, as can be borne. In violent attacks, use A instead of B, and increase length and frequency of applications.

DIPHTHERIA.

First. If very severe, place No. 2 electrode back of neck in B, No. 1 electrode around the front of throat in D, twenty minutes to an hour if necessary.

Second. When rested, proceed as for tonsillitis. (See directions.) An excellent remedy is found in the following prescription used as a gargle: two fluid-ounces of camphor water, one drachm of ehlorate of potassa diluted in tepid water,—use every two hours.

ENLARGED TONSILS.

If acute,

First. No. 3 electrode on the breast-bone in D,

apply through the operator, with the hand placed on the external enlargement in B, ten minutes.

Second. No. 2 electrode base of brain in A, sponge-cup externally over tonsils in C, five minutes each side.

Third. No. 2 electrode base of brain in B, the spatula on the tongue in D, ten minutes.

Fourth. No. 1 electrode back of neck in C, electrode between the hands in E, ten minutes.

If chronic,

First. Use the fourth treatment as for an acute attack, but continue twenty minutes. Repeat four or five times, or until an impression is made, which will certainly be marked by soreness, then treat for soreness. (See note.)

Second. No. 3 electrode between the shoulders on the spine in C, the sponge-cup stroking forward over one tonsil then the other in A, ten minutes each.

WHOOPING-COUGH.

No. 1 electrode base of brain in A, No. 4 electrode across stomach in C, fifteen minutes; then change No. 1 to throat in B, No. 4 or 6 across the liver, stomach, and spleen in D, ten minutes. Repeat at intervals.

PAROTIS—MUMPS.

First. No. 1 electrode base of the brain in B, No. 2 electrode or sponge-cup on swelling in D, ten minutes. If soreness, change No. 1 electrode to A and sponge-cup to C, five minutes more. If the soreness becomes extreme, apply sponge-cup to the swelling

in A, No. 3 electrode on the breast-bone in B, five minutes.

Second. General treatment. (See directions.)

Third. If metastasis occur to the brain, No. 2 electrode base of brain in A, No. 4 electrode across the lower part of back in D, ten minutes. Repeat.

Fourth. If to the mammary glands in the female, place No. 2 electrode on the opposite side of the breast from the swelling in C, the sponge-cup on the swelling in E, ten minutes. General treatment also. (See directions.)

Fifth. If to the testicles in the male, place the round electrode in a hot sitz-bath in D, the sponge-cup stroked down the spine from base of brain in A, ten minutes. Repeat three times daily.

Sixth. If gastric trouble supervenes, manipulate as for gastritis. (See directions.)

GOITRE.

First. No. 3 electrode base of brain or between the shoulders on spine in B, No. 2 electrode covered with a sponge upon the enlargement in D, ten to fifteen minutes. Alternate with C-D, treatments twice a day.

The size of the goitre will probably soon lessen, and thereupon soreness may occur; relieve with A-C current used in the same manner.

Second. No. 5 electrode from the nape of neck downward on the spine in B, sponge-cup moved about over the enlargement with a rocking or kneading motion in D, ten to fifteen minutes. Alternate with A-D current in the same manner.

Each treatment is to be continued about ten minutes, the currents being as strong as can be borne without discomfort. The patient may be suffering under some prolapsed condition of visceral organs, in which case they must be classified and specially treated. Frequent inhalations of carbolated iodine are recommended.

LARYNGITIS AND CROUP; ALSO HOARSENESS.

First. Sponge-cup upon larynx in B, No. 4 electrode across lower part of back in D, strong, fifteen minutes, eight or ten times daily when the ease is bad; and the throat can be gargled with a weak solution of bichromate of potassium, two or three times daily.

Second. No. 1 electrode base of brain in A, B, or C, as can be borne, No. 4 electrode across the stomach in D, ten minutes. Change No. 2 electrode to the front of throat in B, No. 6 electrode across the lower part of back or to the feet in D, ten minutes. Use C-E current in the same manner.

For hoarseness.

First. The vapor-bath if practicable, using sponge-cup around the throat and down the spine in B, No. 7 electrode on the bath-seat for the patient to sit upon in D.

Second. No. 5 electrode from the waist upward on spine in F, No. 2 electrode, or sponge-cup, around the front of throat in A, five to ten minutes.

TRACHEITIS.

First. No. 3 electrode around the throat close to the inferior maxilla (lower jaw) in A, No. 5 electrode from the nape of neck on the spine downward in C, ten or fifteen minutes.

Second. No. 2 electrode around the throat as low as possible in C, No. 5 electrode on the spine from coccyx upward in E, ten to fifteen minutes.

General treatments are recommended, and, also, the vapor-bath.

BRONCHITIS.

Acute and chronic.

First. No. 5 electrode base of brain, on the spine, downward in A, No. 3 electrode, or sponge-cup, lower part of throat, down the breast-bone, in C, fifteen minutes. This implicates the bronchial tract.

Second. No. 5 electrode base of brain, on spine, downward in C, No. 6 electrode from lower part of breast-bone, extending downward in E, ten to fifteen minutes.

Third. B-D and A-F currents, applied as in the preceding treatment.

Fourth. The vapor-bath should be administered at least twice a week, if possible.

ASTHMA.

Manipulate as for bronchitis. Diagnose thoroughly, and treat collateral troubles, which are almost certain to be found.

Inhalations of ozone are highly recommended.

INFLUENZA—COLD IN THE HEAD.

First. Place No. 1 electrode base of brain in A, No. 4 electrode across stomach in C, ten minutes.

Second. No. 5 electrode from base of brain, on the spine, downward in B, No. 6 electrode across the stomach, liver, and spleen in D, fifteen minutes.

Third. No. 1 electrode on throat in C, No. 2 electrode back of neck in E, ten minutes.

Manipulate as for nasal catarrh. (See directions.)

PHTHISIS—CONSUMPTION.

In all pulmonary diseases observe the general rule, viz., *never place the electrodes over the lungs or kidney*; confine the manipulations to the median line, front or back, or above or below the position of the lungs or the kidneys.

First. Place No. 5 electrode (bent to lie close) along the front of the throat, extending downward over the breast-bone in A, No. 4 electrode on the lower part of spine in F. B-D current may be used in the same manner, when the patient can endure it without pain.

Second. Manipulate as for bronchitis. Use the "running-off" and general treatments. (See directions.)

For the cough, place No. 6 electrode from the end of breast-bone downward in C, No. 5 electrode between the shoulders downward in E, ten minutes or longer. No. 1 electrode across the front of throat in A, No. 3 electrode on the back of neck from the hair downward in C, ten or fifteen minutes.

The kidneys require special attention, as these organs are frequently implicated in consumption (see directions for kidney treatment), and regard all other local symptoms, such as suppression of menstruation, etc., which should receive *immediate* attention.

The vapor-baths are usually beneficial.

PNEUMONIA.

First. To reduce the fever (see directions), if possible, administering the foot-bath in bed.

Second. No. 5 electrode from back of neck, on spine, downward in B, No. 6 electrode across the liver, stomach, and spleen in D, twenty to thirty minutes.

Third. No. 6 electrode from the breast-bone downward over the abdomen in A, No. 8 electrode on the lower part of back, the long point between the kidneys, in D, twenty to thirty minutes. C-G same manner.

Fourth. Administer as for consumption. (See first treatment.) If the patient is nervous and sleepless (see directions), treat accordingly. Use tonics as recovering.

PLEURISY.

First. No. 5 electrode between the shoulders, on the spine, downward in B, No. 6 electrode around the lower edge of the affected side of the thorax in D, fifteen minutes; transfer No. 6 electrode to the lower end of breast-bone extending downward in D, fifteen minutes longer.

Second. No. 5 electrode lower end of spine upward in G, the sponge-cup placed on the upper part

of breast-bone stroked downward to the outer edge of the ribs and round the affected side in B, continuously for ten or fifteen minutes.

Third. No. 5 electrode from the base of brain, on spine, downward in A, No. 6 electrode across the liver, stomach, and spleen in C, fifteen minutes to relieve pain and soreness.

Fourth. Administer a vapor-bath or general treatment. (See directions.) As the inflammation subsides, use B-E current in second treatment instead of B-G.

DISEASES OF THE HEART.

Carditis, endocarditis, and pericarditis receive similar treatment; manipulate as for pleurisy of the left side.

Cardiac paroxysms yield at once to the following manipulations:

First. No. 3 electrode back of neck from the hair downward in B, No. 5 electrode around the lower edge of left thorax in C, twenty to thirty minutes.

Second. No. 5 electrode on the middle part of spine in A, No. 6 electrode around the left side below the lung in H, fifteen minutes.

Chronic heart disease receives treatment according to the preceding directions, also a course of general treatment, as well as No. 5 electrode from base of brain, on spine, downward in B, No. 6 electrode across upper abdomen in D ten minutes; transfer No. 6 electrode across the lower part of back in D ten to fifteen minutes; also give attention to the circulation.

GENERAL CIRCULATION.

First. No. 5 electrode on the middle part of spine in A, No. 8 electrode long point from lower end of breast-bone in H, twenty minutes; change to D-E current in the same manner ten minutes longer, then transfer the negative to hands or feet five minutes to complete the treatment.

Second. No. 4 electrode small of back in D, No. 6 electrode across the abdomen in H, fifteen minutes; then place the hands on B and the feet on C ten minutes.

PARETIC DIAPHRAGM.

This is attended with weak and sinking sensations, etc., from prolapsus of the viscera of the abdominal cavity, and is the result of mechanical as well as constitutional faults.

Among these may be mentioned much standing, lounging in bad positions, going up and down stairs, overexertion, straining, tight or heavy clothing about the waist, the general bad habit of women who transform the natural short waist into the long waist now sought, and dyspepsia, all are causes of this very troublesome and often distressing malady.

First. No. 5 electrode on the middle part of the spine in F, No. 4 electrode on the upper part of stomach in H, twenty minutes. The SILVER HELIX may be used in the same.

Second. No. 6 electrode below thorax in D, No. 5 electrode between the shoulders, on the spine, in B, twenty to thirty minutes.

Third. Administer the vapor-bath, if possible, seat-

ing the patient on No. 7 electrode in D, the sponge-cup (used as directed in second treatment for pleurisy) stroked down and round both sides in A, fifteen or twenty minutes.

INDIGESTION.

Take daily treatments after meals.

First. No. 4 electrode across the stomach in D, No. 5 electrode between the kidneys in B, twenty-five minutes. Alternate with D-E and D-G in the same manner.

Second. No. 5 electrode on the middle of the spine in A, No. 6 electrode across the liver, stomach, and spleen, with a rocking motion,* in D, or the sponge-cup stroked around from both sides to the stomach in D, fifteen or twenty minutes. This treatment should be used in all cases when, after eating, an accumulation of gas causes an oppressive feeling, or a sensation of heaviness in the head or eyes. If accompanied by vertigo or dizziness, apply

Third. No. 6 electrode across the upper abdomen in E, No. 2 electrode at the base of brain in C, five minutes.

DYSPEPSIA.

This most common disease is frequently accompanied by urinary trouble. Treat, therefore, so as to

* The rocking motion so frequently directed for paralytic, paretic, tumorous conditions, etc., is produced in the following manner: The operator adjusts the electrode to the desired location, then places the right hand upon it, and, with a firm, gentle motion, removes the pressure of the hand gradually from the wrist to the finger-tips, and from the finger-tips to the wrist, continuously and alternately, during the allotted time of treatment.

implicate the kidneys and bladder, also the stomach, liver, spleen, and pancreas.

First. No. 4 electrode from the lower end of breast-bone downward over the stomach in B, No. 5 electrode on the middle part of spine in D, twenty-five minutes. Change B to the hands five minutes.

Second. No. 6 electrode across pit of stomach in G, No. 5 electrode from between the shoulders, on the spine, downward in C, twenty-five minutes.

Third. No. 5 electrode over the breast-bone downward in D, No. 4 electrode small of back in E, twenty-five minutes. Particular attention should be given to the general health and diet. The following treatment for morbid liver should also be administered :

MORBID LIVER.

First. No. 6 electrode across the lower part of back in B, No. 8 electrode, long point over stomach, covering liver and spleen in D, twenty minutes.

Second. No. 6 electrode around the right side, just above the hip, rocked gently by the operator, in D, No. 5 electrode between the kidneys in G, ten or fifteen minutes. The current from the SILVER HELIX may also be administered in this way ; then to relieve any soreness which would naturally result from this, change to A-C current without the rocking motion, use B-D current in alternation with D-G current.

Enlargement of the liver. Administer B-D, C-H, and C-E currents, using the vapor-bath with A-D current as usual.

CONSTIPATION.

First. Place the cylinder-electrode enclosed in a wet sponge at the anus in D, the sponge-cup, in B, used to manipulate the bowels with a kneading motion systematically along the course of the large bowel from the right groin upward across the abdomen and down to the left groin, twenty minutes; alternate with A-D, No. 6 electrode over the bowels in A, D as directed before, twenty minutes.

Second. The spatula-electrode on the tongue in A, the cylinder-electrode enclosed in a sponge at the anus in D, ten minutes.

PILES—HEMORRHOIDS.

First. The cylinder-electrode enclosed in a wet sponge at the anus in A, No. 4 electrode across the lower part of back in D, twenty minutes; alternate with D-F.

Second. Introduce the rectal electrode with the negative, No. 3 electrode from the waist down the spine in the positive, using the following currents with judgment: B-D, anticongestive, B-F, astringent, A-H, circulatory currents. If there is hemorrhage, use C-B, styptic, B-F, astringent, and A-F, emollient currents, twenty-five or thirty minutes. The general health must receive careful consideration.

COLIC—TENESMUS—CRAMPS.

Treat all these on similar principles.

First. Manipulate as for constipation, A-D, with the current reversed, the positive at the outlet of

the passage, the negative in sponge-cup at its summit, moved slowly over the abdomen in D, twenty or thirty minutes, or No. 6 electrode placed across the abdomen in D. If the cramps are very severe, treat as follows :

Second. Apply hot compress over the abdomen, on which place No. 7 electrode in D, No. 8 electrode on the back, long point between the kidneys in B, ten to thirty minutes or more, very strong.

Third. No. 3 electrode from the neck downward on the spine in C, No. 4 electrode across the stomach in E, fifteen to twenty minutes.

Fourth. No. 5 electrode on the middle part of spine in B, No. 6 electrode over the upper abdomen in G, fifteen minutes, then over the lower abdomen ten minutes longer.

Fifth. No. 5 electrode from the base of brain, on the spine, in D, No. 6 electrode from stomach down over the navel in H, fifteen to thirty minutes.

Sixth. As the patient convalesces, administer F-G as a mild stimulant and use general treatments, frequent applications of thirty or forty minutes.

DIARRHŒA AND DYSENTERY.

First. No. 8 electrode on the abdomen in D, No. 3 or 4 electrode on the lower part of spine in B, fifteen to thirty minutes.

Second. No. 5 electrode on the lower part of spine in A, No. 6 electrode from the groin upward on one side of the abdomen in G, ten minutes, then on the other side ten minutes longer.

Third. Manipulate as for piles and hemorrhoids. (See first treatment.)

Fourth. No. 5 electrode from the base of brain down the spine in C, No. 4 electrode over the pit of stomach in E, fifteen minutes; then change No. 5 electrode to the lower part of the spine in H ten minutes longer.

Fifth. The vapor-bath if practicable. Twenty drops of myrrh in a wineglassful of water, a table-spoonful every half-hour, will frequently stop diarrhœa.

CHOLERA AND CHOLERA MORBUS.

During an epidemic, a good preventive will be found in the regular use of the electric vapor-bath, and having some bran crackers at hand at all times with which to meet the first cravings of hunger.

For the paroxysm administer, as strong as can be borne, the following course:

The great characteristic, despite burning pains, is deficiency of gastro-intestinal heat. Therefore apply,

First. No. 4 electrode from the end of breast-bone over the stomach in E, No. 5 electrode between the kidneys, on the spine, in C, fifteen to twenty minutes, or until better.

Second. No. 6 electrode over the upper abdomen in B, No. 7 electrode under the feet in D, or the electric foot-bath may be given in bed with the same current continued until perspiration is induced.

Third. No. 5 electrode from the lower end of spine upward in G, No. 6 electrode across the liver, stomach, and spleen in B, twenty minutes.

Fourth. A-D current, the electrodes placed as

directed in preceding treatment, the application to be continued until the pain is eased and the evacuations arrested.

The patient should be in bed, well guarded from draughts or change of temperature. Now wait for developments, and if the disease inclines to persist or recur, treat at intervals of one or more hours.

KIDNEY TREATMENTS.

Weak or sore kidneys.

First. No. 5 electrode between the kidneys, on the spine, in C, No. 6 electrode across the liver, stomach, and spleen in E, twenty-five minutes.

Second. No. 8 electrode on the back, long point between the kidneys in G, No. 6 electrode from the pubic region upward in C, twenty-five minutes; alternate until relieved.

Prolapsed or floating kidney.

First. Place No. 5 electrode on the spine, between the kidneys, in A, No. 6 electrode across the liver in D. The operator should place the index finger of the right hand under the electrode, near the centre of the liver, then draw the cylinder out and return it quickly, when the displaced organ will be distinctly felt by the patient and the operator to adjust itself by the contraction of the ligaments into its normal position; this should be followed by a gentle treatment with the same current for ten minutes longer. An electric belt should be immediately placed upon the patient, and worn until complete recovery.

Second. No. 5 electrode on the middle part of the spine in A, No. 6 electrode across the upper part

of abdomen in D, fifteen minutes; then place No. 6 electrode across the middle part of abdomen in D fifteen minutes longer. Administer this treatment for several days, then alternate with one or the other of the treatments for weak or sore kidneys. (See directions.)

ALBUMINURIA.

Diabetes.

These two affections are considered together, as their pathological history and electro-therapeutic indications are in some respects similar. Albuminuria is more or less identified with certain predisposing and exciting causes. Lymphatic women who are heavy and careless eaters, consuming condiments and stimulants largely; or men who are daring athletes, who habitually and exhaustively exert their whole muscular power, or persons whose professions cause similar exhaustion of muscular and nervous tone, especially where the loins are greatly taxed; blows, falls, strains; all these are conditions which may be precursory to this diseased state of the kidneys.

The cranial diagnosis may frequently reveal a lesion of the region of the kidneys, capable of development into Bright's disease, in advance of chemical microscopic tests. The treatments of these conditions are similar, as already stated, and consist of manipulation addressed to the kidneys and to the connecting viscera, according to the directions given for inflammatory conditions.

DROPSY.

Dropsy is a frequent sequel of kidney affections, as well as the result of many other diseases, and requires a most thorough diagnosis to ascertain the cause, which should be manipulated in conjunction with the following special treatments:

First. Place No. 7 electrode upon a chair or stool, and seat the patient upon it in G, with a large sponge-cup in A; stroke down the spine from the base of brain to the coccyx repeatedly, occasionally giving the sponge-cup an outward movement below the kidneys toward the hips; continue for fifteen or twenty minutes.

Second. No. 7 electrode upon a chair or stool in D, No. 6 electrode over the liver, stomach, and spleen in B, fifteen or twenty minutes.

Third. No. 7 electrode on a chair or stool in A, No. 8 electrode under the feet in D, or the foot-bath may be used, fifteen minutes.

Fourth. No. 8 electrode on the back, the point between the kidneys in H, No. 7 electrode over the abdomen, with a rocking motion, in B, fifteen minutes.

Fifth. For œdema of the legs, place No. 7 electrode under the feet in E, No. 5 electrode bent to encircle the leg in C, and by both of the operator's hands drawn gently downward over the legs alternately, five or seven minutes each.

Sixth. The vapor-bath, especially if there is swelling of the face, or if this is not convenient, No. 5 electrode from the base of brain down the spine in

B, No. 6 electrode across upper abdomen in H, fifteen or twenty minutes, or A-D.

The general health and special symptoms as well as diet must receive close attention.

INCONTINENCE OF URINE.

This difficulty is frequently caused in children by local irritation; the parts should be well and frequently bathed and the child cautioned against chafing the parts by yielding to the desire to rub or scratch when burning or irritated.

In adults it frequently occurs from pressure against the bladder, prolapsus of the bladder, straining on the urethral ligaments, and again from calculi deposited in the fundus and irritating the mucous lining of the bladder, and ultimately causing muscular relaxation of the mouth of the urethra.

The plan of electric treatment will be about the same in all cases, if there exists no obscure reason for the weakness.

First. No. 2 electrode over the bladder in B, the cylinder-electrode wrapped in a sponge against the pubes in D, ten minutes.

Second. No. 4 electrode over the bladder in A, No. 5 electrode between the kidneys on the spine in C, five or ten minutes; treatments may be administered twice a day.

If complications exist they should be addressed with judgment, for they may be the cause of the manifest disease.

When the urine scalds the skin and causes an abrasure, great relief can be obtained by bathing

with tepid water, then applying glycerine, and laying a piece of old black silk well saturated with water between the parts. This simple attention will frequently afford great relief.

CYSTITIS.

Metritis.

For both these maladies the manipulations are the same for men and virgins; married women may require the vaginal electrode. The use of the vaginal electrode for virgins is always to be avoided, as effectual treatment can otherwise be obtained in nearly all instances, even in uterine inflammation and displacement.

First. No. 4 electrode across the small of the back in C, No. 2 electrode on the supra-pubic centre in G, fifteen minutes.

Second. A-D current applied, as in the preceding treatment, fifteen minutes.

For affections of the urethra, vaginal cavity, of cervix, and even of rectum, of a suppurative character, adopt the principles involved in the cure of uterine ulceration. (See directions which follow.)

Access to these parts is also attainable by way of the rectum and vagina.

Ovaritis. No. 4 electrode over the affected ovary in D, No. 2 or 3 electrode on the opposite side in B, fifteen minutes change to C-D current, ten minutes; or No. 4 electrode over the affected side in B, the vaginal or rectal electrode applied with D, fifteen minutes, A-D ten minutes.

ULCERATION OF THE GENITO-URINARY PASSAGES,
RECTUM, ETC.

In these affections the neck of the bladder, vagina, cervix uteri, rectum, etc., are subject to irritation and even actual ulceration. In this region such conditions are evidenced by great pain in urinating, and other well-known symptoms, varying according to locality, and the degree of the morbid condition.

The principle of treatment in all these is the same, —what may be called, in electro-therapeutic language, a running-off treatment, commonly applied thus (supposing it to be the female bladder):

First. No. 2 electrode on the super-pubic centre in B, D attached to the female catheter, which is to be simply engaged in the urethra, gradually increase the strength of the current until it becomes as strong as can be comfortably borne; continue ten minutes.

Second. A-D in like manner, but withdrawing the catheter to the orifice, and there holding it five minutes.

The male organs require a longer catheter, insulated or not, at the outer portion by gum tubing.

If uterine ulceration extend to the fundus, it may be characterized by membranous or other extreme form of dysmenorrhœa, and by an exquisite sensitiveness to the contact of instruments, the extent of the morbid process may render a considerable depth of insertion necessary.

First. The patient recumbent, the battery at the side of the couch, attach a conducting-cord to Sims's sound, insulated, all but three inches, but not

yet connected with the battery; No. 2 electrode supra-pubic centre in D. Holding the sound, with the right index finger guiding it, carry it to, but not yet into, the os. Then with a very gentle current connect this conducting-cord with the B post, whereby the current is made to flow in reverse, acting as a local anæsthetic. Increase the strength as the benumbing effect becomes apparent, up to the maximum of endurance; now gradually pass the sound quite to fundus. Once fairly located,

Second. Reverse the current, giving B-D still, but from above downward. This is done by simply changing the position of the pins of the conducting-cord at the battery, without disturbing either patient or appliances; continue thus ten minutes, then,

Third. Withdraw the sound to the os, and transfer the pin of the external conducting-cord to A, five minutes; when tolerated, increase treatments to thirty minutes in all.

UTERINE DISPLACEMENTS.

The causes of these very common but avoidable affections are long-waisted dressing and its pernicious results; weakening of the muscular system by any means; everything that excites unduly, or congests the uterus and ovaries; falls, blows, strains; and carelessness as to voiding the contents of the bowels and bladder.

These cases, with rarest exceptions, need only external applications of electricity, to cure them per-

fectly. Married women, especially if the parts are relaxed by child-bearing, may require, as a preliminary, manual replacement of the uterus, followed immediately by internal treatment. If these manual replacements are requisite, let it be remembered that in repositing this organ, lateral deviation usually forms part of the trouble, whatever its main character may be, and that the first corrective movement must be lateral also; after which, the median deviation will much more readily yield.

The importance of prompt attention to these troubles may be estimated by a moment's reflection on the fact, that in two-thirds of the tubercular cases which occur in young girls, the first symptom is some form of uterine difficulty. Then the disordered stomach, wrong eating, with unhealthy tastes, impoverished blood, and phthisis. Early attention to uterine troubles, seemingly of the most insignificant character, has again and again broken up the whole tendency, and saved a life from sinking into the inherited grave of a consumptive family.

The general rule to treat the most distressing symptoms first, finds an imperative exception in cases of "galloping consumption," traceable to and associated with uterine displacement, etc. In all such cases the special rule is to treat the uterus first. In all these cases the object is by the electric treatment to tone up the muscles and ligaments and viscera, so that the organs will remain in their normal positions. In virginal cases follow the directions for married women, with this exception, that the positive is placed upon the small of the back, not in the vagina.

In the married, the vaginal instrument is used. Here, as in all other internal procedures, it must be remembered that the mucous secretion acts in a dispersive manner on electric currents; the reversed currents are used in many of these applications.

First. Have hot and cold water at hand; and everything else in good order. Place the battery on a stand, near the right of the couch; attach the vaginal electrode to A, and let it lie in hot water, by way of preparation; before introducing, rub it with fine soap or glycerine, also lubricate the index finger, throw a sheet over the patient, who should raise and flex the left knee, keeping the hands down; examine and correct the displacement; then pass the vaginal electrode alongside of the finger to the posterior cul-de-sac, or, if there be metritis, to the os; as indeed may be done in other cases; withdraw the finger, holding the instrument inside in undisturbed position; place a support firmly under the electrode; lower the knee; remove the hand; have ready the sponge-cup, attached to the conductor but not to the battery, with its handle inside the outer sleeve of your right arm, that it may not touch the patient's limbs; place the palm on the outside of the cup, and carry it up to the left groin; place the sponge well over the ovary; connect to the battery in D; make the current as strong as can be borne, then quickly return the cylinder with the left hand, which will cause active contraction; continue five to seven minutes.

Second. When, after this time, the contraction has nearly ceased, lift the pin from the post, and so dis-

connect; reapply sponge to right ovary, reassuring the patient, and cautioning her to keep the arms down; and proceed as before; five to seven minutes.

Third. Disconnect as before, and reapply over the uterus itself.

Do not continue longer at either point than seven minutes, nor after contraction ceases. If this be neglected, great soreness may ensue, and retard the cure, even requiring to be antidoted.

THE IMPROVED METHOD FOR DISPLACEMENTS.

First. Place No. 4 electrode, with the operator's right hand upon it, over the organ prolapsed in D, No. 5 electrode from the coccyx upward on the spine in A; attach the conducting-cords to the battery, and draw the cylinder out quickly, and return it as soon as the operator feels the organ assume its normal position. One treatment will accomplish this.

Second. No. 6 electrode across the abdomen in E, and change No. 5 electrode to C, and apply gently for twenty minutes. Immediately after the treatment, an Electric Abdominal Supporter should be fitted to the patient, to be worn during the day for several months, and thoroughly aired at night. Daily treatments should be taken, always a local manipulation and usually a general treatment, according to symptoms.

Not less than four days of consecutive treatment must be stipulated for, at the commencement, with all old cases, as this is needed to be effective, although the immediate effect is often very marked after a single treatment.

Now come abundant and imperative cautions,—to eschew all lifting, reaching up, stooping, going up and down stairs, and sexual intercourse, during three or four days, at least from the beginning, and later, according to condition. And in combing the hair the patient must sit down. These warnings are requisite to guard against straining the ligaments sustaining the uterus to prevent relapse.

In cases of very limited time, treatments may be given, provided all the cautions be observed scrupulously, twice a day, for four days. If no haste, once daily; when, in about thirty days, a cure may be expected, or, in very severe cases, sixty days.

Much of the final success of the treatment must, of course, depend upon a better observance of hygienic conditions than were probably in vogue with the patient prior to consultation.

OVARIAN WEAKNESS.

First. No. 4 electrode across the small of the back in F, No. 6 electrode across the lower abdomen in G, twenty-five minutes.

Second. No. 8 electrode on the back, with the point between the kidneys, in D, No. 6 electrode over the abdomen, from the waist downward, in A, fifteen minutes; then change to D-H current, ten minutes longer.

WEAKNESS OF UTERUS AND BLADDER.

No. 5 electrode the middle part of the spine in G, No. 4 electrode vertically over bladder and uterus in B, fifteen minutes. Change to B-E current, ten minutes longer.

WEAKNESS OF BOWELS.

No. 6 electrode from the left ovary diagonally upward to the liver in D, No. 5 electrode on the lower part of the spine in F, twenty-five minutes. On alternate days apply from the right ovary to the spleen in the same manner.

PAINFUL MENSTRUATION.

The efficacy of electricity is unrivalled for the treatment of this painful disorder.

Daily treatment should be administered for a week before the menstrual period.

First. No. 6 electrode from the bladder to the navel in D, No. 5 electrode between the shoulders, on the spine, in B, twenty-five minutes.

Second. No. 6 electrode across the upper abdomen in E, No. 5 electrode between the kidneys, on the spine, in A, twenty-five minutes. Alternate with the first treatment.

Third. No. 6 electrode across stomach and liver in C, No. 4 electrode across ovaries and uterus in D, every hour.

Fourth. For paroxysms of pain use No. 4 electrode low down across uterus and ovaries (if pain is chiefly in one ovary, vertically on that side) in D, and No. 5 electrode between the kidneys on the lower part of spine in B. The current as strong as can be borne, which will ease the pain. The pain can be checked by vibrating the cylinder quickly. Treatment may be continued for a half-hour or more, and after fifteen minutes' interval repeated, if necessary.

Fifth. No. 4 electrode across the uterus in G, No. 5 electrode on the middle part of spine in C, thirty minutes.

SUPPRESSED MENSTRUATION.

First. No. 8 electrode on the lower part of back, the point upward, in D, No. 6 electrode as low as possible across the abdomen in B, thirty minutes.

Second. No. 6 electrode across the lower abdomen in B, the cylinder-electrode in D, placed in a hot salt-water foot-bath twenty-five minutes just before retiring.

LEUCORRHEA.

First. No. 4 electrode across the small of back in D, No. 6 electrode from the navel downward over the abdomen in F, twenty-five minutes.

Second. No. 5 electrode between the kidneys, on the spine, in G, No. 8 electrode on the abdomen in H, twenty-five minutes.

Third. No. 4 electrode across the bladder in C, the cylinder electrode, enclosed in a wet sponge, placed at the external entrance to the vagina in E, fifteen minutes.

IMPOTENCE.

The hygienic conditions of cure are well understood, and cannot be overrated.

The electric treatment is as follows:

First. The cylinder electrode, enclosed in a wet sponge, placed below the scrotum in B, the sponge-cup stroked from the coccyx upward on the spine to the kidneys in D, twenty minutes.

Second. No. 5 electrode, between the shoulders

in E, No. 2 electrode on a very large sponge, placed over the external genitals in G, twenty minutes.

Third. No. 4 electrode across the small of back in H, No. 4 or 6 electrode across the lower abdomen in F, twenty minutes.

Fourth. No. 3 electrode on the spine, between the shoulders, in C, No. 4 electrode lower part of back, on the spine in F, twenty minutes.

Fifth. Administer the vapor-bath.

GONORRHOEA.

Have a small basin for the exclusive use of the patient, place the negative in the water and insert the end of the penis. The positive applied above the pubic region, or on the spine, or around the penis.

First. B-D continued for ten minutes.

Second. Then change to A-D or G-H, ten minutes.

A woman should receive similar treatment, only using the vaginal electrode.

Repeat once a day, or oftener, according to the urgency of the symptoms, and varying with other treatments, if needed, to meet special indications, as for fever, etc.

SYPHILIS.

Primary Ulcers.

Manipulate, if much inflamed as in gonorrhœa, taking care to submerge the affected portion of the surface. But in the more common indolent condition, whether of chancre or chancroid, a focalized manipulation is preferable. A small sponge may be

used in D, No. 4 electrode over the pubic region in A, ten minutes, then change to A-D ten minutes longer, daily treatment, this should bring about a simple healing condition which changes to cicatrization. (See directions for ulceration and treat accordingly.)

CONSTITUTIONAL SYPHILIS.

Make frequent use of the electric vapor-bath, using in alternate B-D and A-D. In addition, treat whatever local symptoms exist. For cutaneous syphilis, the bath, with mercurial fumigation of a mild sort, is required. For mercurialism combined with it, resort to the eliminating treatment. (*Vide* cutaneous diseases, etc.)

BUBO.

First. Submerge the penis in earbolated water in D, sponge-electrode upon the swelling in B, twenty minutes.

Second. A-D, moving the positive over the swelling toward the negative below, five minutes.

Third. If great soreness, use A-C instead.

HYDROCELE.

Submerge the scrotum in basin of water; or, place a wet sponge on No. 4 electrode and accommodate the scrotum in it in D; No. 2 electrode, above in B, ten minutes; change B to A, ten minutes longer.

VARICOCELE.

First. Patient recumbent; having located the veins, place No. 1 electrode on one side of them in

B, the sponge-cup on the opposite side in C, ten minutes; change to F-H in the same manner, ten minutes longer. Use A-B and A-C current and treat daily.

VARIX OF THE LEGS.

Varicose Veins.

The patient recumbent.

First. Place No. 5 electrode above the heel, and overlying the lower portion of the veins in B, No. 3 electrode beside the coccyx upward on the same side in C, treating the worst side first; then the other; ten minutes each.

Second. No. 5 electrode in E, and place both legs at once on it, and then each one separately; the sponge-cup in B, stroked upward in the course of the veins, the worst leg first, ten minutes each.

Third. Apply A to the base of brain, C at coccyx, five to ten minutes.

Fourth. Vapor-bath every day in both these affections.

ANEURISM.

If near to bursting, maintain a coating of mucilage of quince-seed upon its surface as a precaution, combining with it a little vinegar or lemon-juice, ten drops to the ounce. Apply with the handle of a silver spoon. One ounce and a half at a time may be used.

Wherever located, the principles of treatment are the same. Supposing it to be a protruding, anterior, aortic tumor, the patient reclining, apply

First. No. 3 electrode along the spine in C, below

the level of the protrusion ; operator holding E in the left hand, wet two fingers of the right with the acidulated mucilage, and apply, moving them around the upper half of the tumor again and again. Continue this manipulation twenty minutes. The first two or three minutes should be preparatory to this, using only a little tepid water to soften the cuticle and favor absorption.

Other aneurisms are to be treated in a similar manner, placing the negative on the lower course of the artery.

Aneurism in delicate situations, as about the orbit, require careful manipulation ; and for this, the positive is to be bound on the right wrist of the operator, who uses this hand for manipulation, the negative being held upon the carotid.

Aneurism by anastomosis. Treat as for protruding aneurism ; negative on the nearest arterial trunk, below ; the positive applied by hand or by sponge-cup.

First. Treat daily with B-F, twenty minutes.

Second. But, should it be characterized by extreme hardness, as is scirrhus, supposing it accessible, begin with C-E, the "warming and softening" current, which is diffusive, and prepares the way for B-D, which follows it. Use the former twenty minutes ; the latter five minutes.

Repeat this daily for several days, or until there is perceptible softening or diminution.

Third. B-D thirty to forty minutes, next day.

Fourth. A-D in bath, base of brain to feet, twenty minutes.

Fifth. For subsequent nervous irritability, especially after B-D, use A-C; the hands to the coccyx; five to ten minutes.

And give great attention to the general circulation.

INDURATIONS—TUMORS—CANCERS.

As a general thing the manipulations for these diseases should commence with B-D, the breaking-up current, having a special affinity for morbid tissues and accumulations; A-D, the eliminative, or running-off current, effectual in disposing of morbid matter. If the growth is internal, place the positive as near the tumor as possible, and the negative near some emunctory. But should it be characterized by extreme hardness, as is scirrhus, begin with C-E, the warming and softening current, and C-D, the permeating current, which are diffusive and prepare the way for B-D. Repeat these applications daily for three days,—C-E or C-D current twenty minutes, B-D current fifteen minutes. Then use B-D the first half and A-D the last half of a forty-minute treatment. The other currents most beneficial are C-H, B-F (especially in malignant forms), and the current from the SILVER HELIX.

POLYPUS.

(*Vaginal or Uterine.*)

First. Place No. 4 electrode across the supra-pubic region in B, the vaginal electrode to the growth, if in the vagina, or to the os, if within the uterus, in D, twenty minutes. Change to C-H, or the current from the SILVER HELIX in the same manner, for ten

minutes longer. Repeat daily for a week if necessary, then the polypus may readily be detached by the following method :

Second. Place a loop of silver wire around the polypus, or an ordinary uterine sound may be pressed firmly against and drawn slowly around its base, in D, No. 4 electrode across the supra-pubic region, slowly rocked by the operator, in A, fifteen minutes; or the current from the SILVER HELIX used in the same manner.

TUMORS.

First. No. 4 electrode on one side of the tumor in B, another No. 4 electrode on the other side in D, with the rocking motion, fifteen minutes; transpose the current and manipulate in the same manner ten to fifteen minutes longer; alternate with the same current and the same electrodes placed above and below the tumor; administer in precisely the same manner. These applications should be made frequently to destroy the life and growth of the tumor, by running the electric current through the mass in every direction. The work of disintegration commences with,

Second. No. 6 electrode over the tumor in F, No. 5 electrode on the lower part of spine in D, thirty to forty minutes.

Third. The current from the SILVER HELIX administered as in the preceding treatment.

Fourth. Use the second treatment as directed for ovarian tumors, then the absorbent and running-off treatments.

Fifth. No. 6 electrode over the tumor, with the

rocking motion, in E, No. 4 electrode small of back in C, fifteen minutes; then change to B-H current in the same manner but without the rocking motion.

Sixth. No. 4 electrode above the external prominence, slowly rocked, in A, the cylinder electrode enclosed in a sponge placed at rectum, or vagina, or use the vaginal instrument with D fifteen minutes; then remove D to the feet, allowing A to rest on the tumor ten minutes longer.

OVARIAN TUMOR.

Diagnose thoroughly; if displacement of the uterus is discovered, give it immediate attention. (See directions for displacement.)

First. Place No. 6 electrode across the external prominence in B, the sponge-cup moved with a rolling or kneading motion around the outer edge of the tumor externally in D, fifteen to thirty minutes.

Second. No. 8 electrode, the short point over the supra-pubic region in H, No. 6 electrode across the lower part of back in C, twenty-five to thirty-five minutes. The current from the SILVER HELIX may be used in the same manner.

Third. No. 5 electrode from the coccyx on the spine upward in B, No. 6 electrode across the abdomen over the tumor in D, ten minutes; change to No. 4 electrode a little above the centre of the external prominence, slowly rocked by the operator, in A, the cylinder electrode enclosed in a sponge placed at the entrance to vagina in D, fifteen minutes longer.

Fourth. If the tumor is attached to the ligament,

place No. 3 or 4 electrode on the abdomen just beyond the circumfluence of the tumor, at the point where the nearest approach to the adhesion can be found, the edge of the electrode pressed steadily between them in D, No. 6 electrode across the lower part of back in B, fifteen minutes; then place No. 6 or 8 electrode over the tumor in E, No. 5 electrode on the lower part of spine in C, ten minutes longer.

CANCERS.

Cancer of the breast may receive direct treatment without fear of injury to the lungs by making the application through the breast from one side to the other, as follows:

First. Place No. 1 electrode, or a sponge-cup, on the opposite side of the breast from the enlargement in C, another sponge-cup stroking down to the cancer if it is an open one, or down to and off at the nipple if unbroken in D, fifteen minutes. Both of the sponge-cups may be gently stroked toward the nipple, and if a discharge can be induced this way a cure is almost certain.

Second. Use B-D, C-H, A-D, and the current from the SILVER HELIX alternately, or as indicated by good judgment.

Third. If broken, as with all open wounds, apply the negative to the raw surface with a sponge or folds of cloth intervening. The positive above, so placed as to give the electrical flow over the nerves to the growth, with G-H and A-D currents.

Under this process cancers may rapidly slough, but without much hemorrhage.

Hemorrhages of all kinds are readily stopped by A-B direct, or B-C and B-E reversed.

When the surface presents a perfectly healthy ulcerated appearance, use C-E current to heal, as with other suppurating cavities. If slow to heal, apply a wet cloth over the whole suppurating surface; or a sponge containing the negative; the positive to the surface near by above, with A-F.

Injury to the skin by the negative is possible in manipulating tumors, hence it should be kept moving as much as possible, as already directed, toward natural duets and emunctories, but a suppurating surface is itself such.

In all varieties of cancer there is a great probability of other organs, internal and external lymphatics, etc., participating. These are to be watched, and morbid changes timely and actively treated. To this end, always promote a tendency to the outlets of the body: a similar course to the preceding may be pursued for all malignant cancers.

ERYSIPELAS.

First. If purely superficial, apply sponge-cup over a thoroughly wet, soft linen cloth placed on the affected part in E, No. 5 electrode between the shoulders, on the spine in C, ten to fifteen minutes. The current should be gentle during the manipulation; the sponge should be stroked around the extreme outer limit of the inflammation to prevent its spreading. During the intervals of treatment, the application to the parts of tepid flaxseed tea or cocoanut oil as an emollient will be most beneficial.

Second. If deep involving the fasciæ, use B-C, B-D, and A-D currents; the *positive* upon the affected part, and the negative below to draw the inflammation downward.

Third. If phlegmonous, guard against suppuration, arrest it, and cause re-absorption, if requisite and feasible, by localized use of G-H alternately with A-D, frequently repeated, covering the diseased tract fully with tepid wet cloth, to which apply the negative by a large electrode, tied or held in place; positive on outer edge of the affected space, and a little above.

Fourth. If pus has already formed in sufficient amount to demand discharge, a suitable spot is chosen, and the negative focalized there by means of the wire brush, with its ends gathered into a compact bunch, thus acting as a gradual cautery, which is readily regulated in the extent and depth to which it shall act; the positive above, and at a short distance only from the other pole, using B-D, B-C, and A-D currents. If sloughs form internally, space must be made for their escape. If suppuration be widespread, several openings may be required.

Fifth. If sloughing occur extensively, a fatal issue is inevitable, unless checked immediately. Hence it demands early preventive attention, wherever phlegmonous erysipelas attacks a dense structure, such as the dorsal fascia, either of the thigh or trunk; the course recommended for this form in general being the prophylactic in such case.

The general system, and special organs and functions, must receive careful attention.

FURUNCULUS, OR BOIL—ULCERS—FISTULA—INGROWING NAILS—BURNS—PANARITIUM, OR RUN-AROUND—FROST-BITE—ABSCESSSES—SPRAINS—ANTHRAX, OR CARBUNCLE—FELON, OR WHITLOW—PUSTULA MALIGNA.

However diverse in pathology, all these affections require like manipulations with electricity.

An important condition of permanent success consists in curing the sympathetic extension of the morbid process along the track of the nerve-trunks involved. Neglect of this is fruitful of relapse, of which a sprain affords marked illustration, and with which may be elassed also the ordinary subacute rheumatic joint. Undue use, after relief, also causes much mischief in both these cases.

Stiffening of the joints requires a persistent after-treatment for its relief, in accordance with the direction under Defective Joints.

The typical procedure, in all the above affections, is this:

Place No. 3 or 5 electrode above the affected part in B, the sponge-cup stroked downward over the part in D, fifteen minutes. Repeat as needed, using C-D and A-D currents also. If it is possible to place the affected part in a basin of water with the negative, do so; if not, a very wet sponge will answer quite well.

Ulcers are very often but symptoms of some constitutional defect, as scrofula, or of general sclerosis, as in old people, etc. Diet and other hygienic conditions must be observed.

In other cases, organic or mechanical obstruction may exist above the ulcer, and must be discovered and corrected, as in varicose ulcer. Aside from such indications, use,

First. Select a suitable electrode in size and shape, to place above the sore in B, the sponge-cup stroked around and over it in D, fifteen or twenty minutes; C-D or A-D fifteen minutes to complete the treatment.

Second. No. 3 electrode immediately above the sore in G, cylinder electrode, enclosed in a soft sponge wet in a weak solution carbolic acid, placed over it, in H, twenty minutes; change to A-D ten minutes longer.

Third. Vapor-bath.

Internal ulcers, if accessible, should be treated always with the negative attached to the internal instrument, and the positive located externally above.

Fistula. Use first C-D, then B-D and C-E currents; alternate with G-H and A-D currents. After each treatment, if the fistula is small and the surface well dried, a piece of adhesive plaster may be made to adhere to the vaginal aspect, supported by a cotton-glycerine pessary, thus expediting cicatrization.

Administer daily applications.

Carbuncles. Treat as for phlegmonous erysipelas. The core, or slough of deep fascia, is to be liberated by the wire-brush cautery, as soon as possible (see directions erysipelas). In boils there is also a slough or core, formed, however, of the superficial fascia. The core of the felon is formed of the theca of the finger, or of the palmar fascia.

Felon. Prepare a bath for the finger of saltpetre and turpentine.

First. No. 3 electrode around the arm, just above the wrist, in A; place the finger in the prepared solution with the cylinder electrode connected with D, quite strong, twenty-five or thirty minutes.

Second. No. 3 electrode on the arm in G, No. 1 electrode placed over a fine soft sponge, wet in the solution recommended, held gently on the affected part in H, twenty minutes; change to C-E current. Bandage the finger and keep it thoroughly wet with the solution. If it is necessary to lance the felon, the sensation may be deadened by A-C current applied above and below it during the operation; immediately after apply A-D. The patient seldom loses a nail, and the tendons of the finger need not become indurated or inflexible after this treatment.

PUSTULA MALIGNA.

A species of malignant boil. It has been induced by the reception of an animal infection into the system; is gangrenous, and usually fatal, because it evades detection until the entire system has become inoculated. Immediate and frequent use of nitrate of silver to cauterize the pustule, and the application of a sponge-cup saturated in a powerful solution of carbonate of soda, in D, sponge-cup at base of the brain in A, twenty-five minutes. If a limb or finger is affected, plunge it in the solution with cylinder-electrode in D, sponge-cup or an electrode placed above in A to prevent the poison, if possible, from spreading through the blood. Poul-

tices of flaxseed sprinkled with a few grains of sulphate of zinc. The author can recommend this course of treatment, having cured a very malignant case when all hope seemed gone. Application of electricity should be made every hour, and the vapor-bath administered at once, if possible.

The currents B-D, C-E, G-H, and A-D may be used to advantage.

These pustules have been caused by the bite of a blow-fly which had been feeding on putrid carrion,—hence the sting of any winged fly is not too insignificant to demand and receive immediate attention, for this disease culminates in from twenty-four to forty-eight hours in death unless arrested.

CUTANEOUS DISEASES.

The relation of these affections to the neuroses, as well as to Electro-Therapeutics, has lately afforded an interesting topic for discussion, but being foreign to our present purpose, may be here passed by.

Certain constitutional vices also bear relation to them; and the same may be said of many visceral derangements. Each of these concomitants must have a full share of attention in treatment.

Again, certain cutaneous diseases are wholly independent, others closely dependent, on the presence of parasites,—vegetable or animal. Even these become impossible, in a condition sufficiently resistant, with due attention to cleanliness or substantial comfort in general.

The electric vapor-bath is a prominent remedy in

all forms ; either in ordinary or with the addition of medicated fumigations. These are placed in an open vessel, over a spirit-lamp, under the seat of the bath.

The fumigations prescribed should be used with caution. For non-parasitic forms the *Gnaphalium*, or Life-Everlasting, is the substance thus used. For parasitic diseases, as well as syphilitic, the prescription is eight grains of the black oxide of mercury in each bath treatment. The usual application of A-D in the bath prevents the penetration of the mercury beyond the cuticle, to any extent. The oxide is moistened with water, and as the steam from the boiler begins to fill the bath, the spirit-lamp is lighted ; a window is provided at the side of the cabinet, through which the patient may breathe the outside air. Continue the bath in the usual way twenty minutes.

By mixing with the oxide an equal quantity of simple prepared chalk, it is made to volatilize more slowly if desired.

When the head and face require fumigation, wet them with a solution of $2\frac{1}{2}$ drachms of calomel and $1\frac{1}{2}$ ounces lime-water ; treat locally in bath whilst thus wet, using B-C, alternating with the general treatment.

After the fumigated vapor-bath, the patient should avoid exposure, not leaving the house for two or three hours. Repeat about every other day.

Leprosy requires the use of the red oxide of mercury as a fumigation (eight grains to bath). After two weeks of such treatment, give fumigation every

second day only, and on the intervening days a systematic treatment, as follows :

No. 4 electrode vertically over stomach B, No. 5 electrode from the coccyx up in C, fifteen minutes.

Eczema, psoriasis, etc.

All forms of skin diseases require the fumigated vapor-bath twice a week, using black oxide of mercury and the following daily applications :

First. No. 5 electrode from the base of brain down the spine in G, No. 6 electrode over the liver, stomach, and spleen in H, fifteen minutes, change No. 5 electrode from the lower end of spine upward in A, No. 7 electrode under the calves of legs or the feet in D, ten minutes.

Second. B-C and C-E currents in the same manner as in the preceding treatment.

Third. No. 5 electrode from below the shoulder-blades down the spine in B, No. 6 electrode across the liver, stomach, and spleen in H, and C-D current.

Fourth. If nervousness arises, use A-C from base of brain to the hands, or No. 3 electrode back of neck, from hair downward, in E, No. 4 electrode the small of back in F, ten to fifteen minutes.

DISEASES OF THE JOINTS, ETC.

Chronic or Subacute, Sequelæ of Sprains, Rheumatism, etc.

If tissue-changes are still active, as shown by tumefaction, pain, etc., treat as in the acute forms.

If only the sequelæ and consequent disability,

First. Place the extremity, a foot or hand, as the case may indicate, on an electrode or in a foot-bath, as most convenient, with G, the sponge-cup moved

repeatedly down over the affected part in C, fifteen minutes.

Second. Use B-D and A-D in a similar manner.

If any paralytic tendency is discovered, use F-H between the shoulders and down the arm, or from the lower part of spine down the legs, etc., according to the part affected.

The general health should be thoroughly established by the use of proper tonics.

Synovitis requires the same general treatment, and the following:

First. Apply an electrode covered with sponge in bend of knee-joint G, sponge-cup with B brushed backward and downward, or a flat sponge covering the front and sides of the joint, twenty minutes; A-D five minutes, same way.

Second. If soreness arise, use A-B and A-C.

Treat fever and other concomitants.

Such treatment will probably obviate suppuration.

Suppuration. Open and discharge with aspirator, then treat as above, also using G-H current.

Hot applications are always to be preferred to cold. The bath is a most efficacious remedy. D is placed in foot-tub and A in sponge-cup, rubbed down from the hip to knee-joint and over the knee. An electric plaster develops the suppuration rapidly, and eliminates the disease.

Morbus coxarius. White-swelling, treat as follows:

First. Every other day for two weeks give the electric vapor-bath, in the usual manner, ten minutes, then seat the patient on No. 7 electrode in the nega-

tive, and apply sponge-cup with positive above the joint and other affected parts successively, holding it firmly thereon, acting more deeply than if brushed.

Second. On the intervening days, C-G and B-D from base of the brain to feet ten minutes.

Reverse B-D five minutes to stimulate.

Third. Sponge-cup in the positive, and apply above the joint; if the knee, use instead an electrode, or a kneecap of brass or other metal with wet cloth or sponge between; the negative below, using D-F or the SILVER HELIX, twenty minutes.

Fourth. If very sore, use during the last five minutes negative under the foot, positive upon joint. This is the same application as is commonly used for toothache, neuralgia, and sciatica. (See directions.)

Diseases of other joints of like nature, as of the shoulder, elbow, and ankle, may be treated similarly.

Stiff joints, deformed, contracted, dry, and cracking joints, all require C-D, permeating D-E, warning D-F, stimulating currents in connection with the treatments directed for sprains, etc.

A liberal use of cocoanut oil to thoroughly lubricate the part and gentle exercise are recommended.

Weak joints should receive similar manipulation.

CURVATURE OF SPINE.

The complicated forms of lateral, forward and backward curvature of the spine render it almost impracticable to lay down given forms of treatments. One observance will always meet with effectual results, namely: the positive pole should be applied to

the contracted side of the spinal curve or curves, and the negative pole on the outer or peripheral aspect of the curvature.

First. The patient should be stripped and placed upon a flat table or pillowless lounge, although the table is preferable for many reasons, and the operator should be assisted by a well-trained hand, so that the patient may be stretched by grasping the ankles and under the arms, and at the expiration of breath, proceed to stretch steadily together, always expending more strength on the contracted limbs. This should be done successively during each treatment not more than six or eight times; during this stretching the electricity should be applied as follows:

No. 5 from the base of brain down the spine in A, No. 8 from the coccyx up to the lumbar region in D, ten minutes.

Second. Then turn the patient face downward, a sponge-cup on the inward curve in G, sponge-cup on the outer peripheral of the curve, in D, altering the negative and positive as the curves deflect in or out; this ten minutes. The patient should be instructed in a series of gymnastics in order to call into action and encourage normal activity of the muscles and circulation.

Third. Every fourth day vapor-bath, or foot-bath, the feet should be placed in hot water with the round electrode in D, sponge-cup stroked down the spine from the base of brain to coccyx in A, and about once a week the patient should be seated on No. 7 electrode in G; the sponge-cup from base of brain down to coccyx, in D, ten minutes; then vigor-

ously across the diaphragm so as to implicate the liver and spleen, ten minutes.

These cases require patience and judicious administration of treatments, which will result in a very remarkable amelioration of the conditions.

The author has had the worst and most complicated cases yield to this treatment, and in comparatively brief time, the conditions of deformity and disease so altered that the crooked, abject patient assumed an erect position, and matured in a normal manner.

If the patient uses crutches, great care should be exercised in graduating the length of the staffs, that they may not be so short as to cause the body to be inclined too far forward in walking, thereby compressing the lungs and stomach; then again that they may not be so long that they crowd the shoulders up and out of position. Another point is to admonish the patient to sleep in as flat a position as possible, without pillows. Lying flat on the face is an excellent plan. Of course in these cases the patient must unite an earnest endeavor with the physician's efforts towards the one end of health getting, for so much depends upon hygiene and the minor detailed modes of life, etc. Constipation must be guarded against.

Conjointly, Electro-Therapeutics, physician, and patient can achieve marvels.

NOTE.—THE BRUSH so frequently referred to by the author is somewhat similar to a wire hair-brush, and is not illustrated in this volume.

APPENDIX.

THIS Appendix is added mainly for the benefit of the student and practitioner not conversant with the author's system of "Cranial Diagnosis." And even to those who are, it will be of interest to know how thoroughly confirmatory of her system rational symptomatology and physical diagnosis are.

SYMPTOMATOLOGY.

Disease is defined to be "a perversion either of the functions or of the structure of the body, or any of its parts."

It is the special province of the pathologist to determine the precise nature, in a state of disease, of the deviation from the normal physiological state or action of the living organism under the disturbing influence of morbid causes, and to give to each particular disturbance a name and place in the nosological system.

Evidences of pathological conditions, or states of disease, are called,—

Rational symptoms and physical signs.

"A rational symptom is a sign of disease which is obvious to the patient himself or the practitioner without close inspection. A physical sign is one determined by examination into the properties and material conditions of the organs of the body. Symptoms guide us generally by physiological inference. Physical signs, by anatomical necessity." By these means are determined ordinarily the character of the morbid process in any given case.

Symptoms are local or constitutional, primary or secondary; premonitory, critical, or characteristic; and are noticed with regard to the manifest disturbances of the digestive, circula-

tory, respiratory, tegumentary, secretory, motor, sensory, and psychical systems, and may be enumerated as follows :

DIGESTIVE SYSTEM.—The tongue is pale in anæmia ; cold in collapse ; red in scarlatina, stomatitis, and gastritis ; furred in indigestion, gastro-hepatic catarrh, fever, etc. ; brown, black, cracked or fissured, and protruded with difficulty in low fevers. The latter applies also to apoplexy. It is protruded to one side in paralysis.

THE TEETH are covered with sordes in low fevers ; are loosened by severe salivation ; and their rapid decay indicates constitutional debility.

THE GUMS when swollen, soft, spongy, and prone to bleed, indicate scurvy. A blue line along the edge of the gums indicates lead-poisoning. A red line is sometimes observed in phthisis, and a white line in approaching salivation ; this is soon followed by swelling, soreness, and a coppery taste.

THE TASTE is bitter in derangements of the liver and dyspepsia ; sour in gastric indigestion ; saltish in hæmoptysis and consumption ; putrid in gangrene of the lungs.

APPETITE is deficient in all acute diseases ; excessive in ill-governed lives ; sometimes in nervous affections, diabetes, and worms ; perverted in hysteria, chlorosis ; sometimes in pregnancy.

THIRST is excessive in high fever and low collapse.

Difficulty in swallowing may be due to inflammation of the fauces, tonsils, or pharynx, spasmodic constriction of the throat, obstruction, tumor, abscess, and low debility.

NAUSEA AND VOMITING may be caused by indigestion, colic, pregnancy, gastritis, hysteria, cholera morbus, cholera, bilious fever, yellow fever, ulcer of stomach, cancer of stomach, disease of the brain, Bright's disease of kidneys, strangulated hernia, poisoning.

CIRCULATORY SYSTEM.—The heart. The principal symptom connected with this organ is disturbed action or palpitation, and may arise from either of the following pathological conditions : inflammation of the heart or its investing membranes, hypertrophy of the heart, chronic valvular disease,

anæmia, nervous irritability, disorder of the brain, dyspepsia. The normal impulses of the heart are already given in the body of this book. But the pulse is an important factor in determining the nature of given abnormal conditions. In disease the pulse may be natural or strong, weak, firm, yielding, full, small, bounding, compressible, rapid, slow, quick, jerking, hard, soft, tense, gaseous, corded, wiry, thready, imperceptible, regular, irregular, intermittent, dicrotus. Without stopping to define all these terms, as that may with propriety be referred to the medical lexicographer, it is not out of place to say that only skill, combined with much practice, is able to recognize the distinction between a rapid and quick pulse and a full and strong one, yet to be able to do this is very important to the practitioner.

The fever pulse is moderately accelerated with an increase of force to the impulse of the heart. But the pulse of inflammation is hard, tense, and full.

When nervous irritation is the disturbing cause, the pulse is usually quick and variable, in rapidity and force, as the patient may be either in a state of excitement or repose.

A jerking pulse indicates valvular disease. In extreme debility the pulse is usually very rapid, and very small or "thready." Irregularity of the pulse is too general, and due to too many causes, to have any special pathological value.

The dicrotus, or double pulse, is to be met with in continued fevers, and is always indicative of a want of tone in the muscular fibres of the arteries, giving rise to a perceptible interval between their impulse and the impulse of the ventricles of the heart.

The blood itself furnishes the most reliable data in determining the nature of morbid changes in the system. But as these peculiarities require microscopic inspection and chemical analysis, reference can only be made to the fact, leaving the demonstration to the pathologist and the chemist.

HEMORRHAGES.—Epistaxis, or bleeding at the nose; hæmoptysis, or spitting of blood; hæmatemesis, or vomiting of blood; hæmaturia, or bloody urine; uterine hemorrhage; hemorrhage

from the bowels ; will be more particularly referred to as they occur in the symptomatology of particular diseases.

THE RESPIRATORY SYSTEM.—Dyspnoea, or difficult breathing, may be due to irrespirable gases in the air, morbid change in the blood, obstruction or constriction of the air-tubes, bronchitis, pneumonia, pleurisy, phthisis, heart disease, aneurism of thoracic aorta, cancer in the chest, hydrothorax, dropsy.

COUGHING.—The character of a cough will usually and without difficulty determine its cause.

A dry and hollow cough is generally nervous or sympathetic. Dry and tight in acute bronchitis ; hacking in incipient consumption ; deep and distressing in confirmed consumption ; barking and hoarse in spasmodic croup ; whistling in membranous croup ; paroxysmal and whooping in whooping-cough.

EXPECTORATION is mucous in catarrh and primary bronchitis ; purulent in advanced and protracted bronchitis ; rusty in second stage of pneumonia ; bloody and muco-purulent in consumption ; nummular and heavy in advanced consumption ; putrid in gangrene of the lungs.

THE BREATH, in temperature, is higher in fever, lower in prostration, and when absolutely cold, is an almost certain symptom of speedy dissolution. In odor the breath is rarely agreeable, except in healthful childhood. It is very heavy in the incipient stages of fever. Sour in indigestion ; offensive from a variety of causes, frequently decayed teeth ; rotten in gangrene of the lungs.

Stertorous, or loud breathing, primarily due to relaxation of the palate, indirectly to cerebral oppression, which may be caused by apoplexy, fracture of the skull, drunkenness, narcotism.

Hiccough, produced by spasmodic contraction of the diaphragm, may be the result of indigestion, nervous disorder, or exhaustion. It is not serious except in the latter case.

TEGUMENTARY SYSTEM.—In fever the skin is hot and dry. Moisture of the skin is always favorable, except in the cold, clammy perspiration of consumption and extreme prostration.

With regard to color, the skin is pale in anæmia, fainting, etc.; flushed in fever and cerebral congestion; flush is very bright on cheeks in hectic fever; forehead and eyes are flushed in yellow fever. The skin is purple or livid in low, continued fever; yellow in jaundice, bilious and yellow fever; sallow in chlorosis, dyspepsia, cancer; blue in collapse, almost black in asphyxia. The great variety of eruptions that occur on the skin will be described in the section on skin diseases.

SECRETORY SYSTEM.—**Alvine.** Constipation may be due to torpor of the muscular coat of the alimentary canal, deficient secretion of the liver or intestinal glands, defective innervation from spinal or cerebral disease, stricture of rectum or colon, strangulated hernia, intussusception (a portion of an intestine falling into another and becoming strangulated), pregnancy, cancer, sympathetic disturbance.

Diarrhœa and dysentery will be more particularly described farther on.

Urination may be difficult, or there may be retention of urine; incontinence of; excessive discharge of, or there may be a morbid character to the urine itself (the latter we must refer for want of space to medical chemistry). Retention may be due to spasmodic constriction of the vesico-urethral muscular fibres, true stricture of the urethra, enlarged prostate, calculus in the bladder or urethra. Suppression is a very serious symptom, and if long continued produces fatal uræmic poisoning.

Excessive urination may be hysterical, or the result of cold or diuretic medicines. But as a symptom of diabetes is very grave.

The average amount of healthy urination in twenty-four hours is from thirty to forty ounces; quantity slightly increased in winter. It is normally acid, and in health of an amber color. Specific gravity 1017–20. A decided deviation from this standard denotes disease.

Milk. The quality and quantity of the mother's milk may be so affected by diseased conditions, or even mental impressions, as to not only cease to be nutritious, but positively injurious to her child. A sudden arrest of this secretion, combined

with a too early cessation of the lochia after parturition, is followed by puerperal fever.

Menstruation, although thus classified, is not a secretion, but is simply a periodical flow of somewhat altered blood, induced by (physiological) ovarian congestion, incident to monthly ovulation.

The principal pathological deviations are amenorrhœa (non-appearance, suppression, or retention), dysmenorrhœa (painful menstruation), or menorrhagia (excessive menstruation).

The diagnosis of these affections belongs properly to the gynæcologists.

Perspiration, when strongly odoriferous, indicates vicarious excretions through the perspiratory glands, and arises from insufficient action of the kidneys and bowels. A characteristic odor of the perspiration is peculiar to measles, scarlatina, small-pox, Bright's disease, typhus, gout, etc.

MOTOR SYSTEM.—Inability to rise from a recumbent position may be due to debility, paralysis, inflammation, or injuries. Inability to lie down, due generally to dyspnœa (difficult breathing). A desire to lie upon the abdomen denotes colic; upon the back with knees drawn up, peritonitis; upon the right side, enlargement of heart or liver; prone or semi-prone position, aneurism of aorta.

Muscular debility arises from total want of exercise, acute disease, exhaustion, prostration, paralysis.

Spasms are tonic, clonic, and choreic. Tonic spasm is fixed rigidity, as in tetanus; clonic, successive muscular contraction at short intervals, as in ordinary convulsions; choreic, a jerking, irregular, muscular movement, beyond the power of the will, as in chorea.

Subsultus tendinum is a jerking of the tendons at the wrist, and is common in low fevers, indicating approaching dissolution.

Hemiplegia is paralysis of one side of the body; paraplegia is paralysis of both lower extremities, and are terms applied to loss of power or loss of sensibility, or both.

SENSORY SYSTEM.—Here the important symptom is pain, and this may be acute, sharp, cutting, shooting, darting, lancinating,

gnawing, tearing, dull, heavy, aching, griping, twisting, bearing down, pulsating, burning, smarting, stinging, nettling, constant, intermitting, fixed, wandering.

Tenderness on pressure indicates inflammation. Pain relieved by pressure indicates the absence of inflammation.

Anæsthesia is the term applied to a total loss of sensation.

THE EYES, when prominent and turgid, indicate acute ophthalmia, or congestion of the brain. The prominence of one eye alone would indicate a tumor behind the orbit, or some other local disease. In wasting maladies, as consumption, the eyes are sunken. Rolling the eyeballs indicates, especially in children, nervous or cerebral irritation. Enlargement of the blood-vessels of the eye and reddened membranes indicate conjunctivitis; when the enlarged blood-vessels converge toward the margin of the cornea, scleritis; discoloration, irregularity, and fixedness of the pupil, iritis.

The eyes are lustreless in depressing disease, especially in approaching death. Consumption, however, is an exception, in which case they are usually remarkably bright. They glare in mania and cerebral inflammation.

Contracted pupil indicates retinal or cerebral inflammation, opium or strychnia narcotism.

Dilated pupil, amaurosis, cataract, apoplexy, hydrocephalus, belladonna or stramonium narcotism.

Dread of light, in ophthalmia, meningitis, cerebritis. Other symptoms connected with the eyes are flashes of light, moving spots, dimness of vision, double vision, half-sight.

THE EARS.—Ringing in the ears, technically called tinnitus aurium, may depend upon cerebral congestion, nervous debility over doses of quinine.

Deafness may be caused by cold in the head, wax in the ears, disease of the ear, softening of the brain, typhus or typhoid fever, quinine.

PAIN IN THE HEAD. This is the *questio vexata* of the profession, both as to cause and treatment. The following statements are only generally true: When the pain is on one side, extending to the face, and is shooting or darting in char-

acter, it is neuralgic. When the pain is attended by stiffness of the muscles that move the head, it is rheumatic. When it is throbbing, pulsating, and accompanied by heat of the head, it is febrile, congestive, or toxæmic. When pain is on top of the head it indicates uterine irritation. Constant or periodic pain in one spot is due to chronic cerebral disease.

PSYCHICAL SYSTEM.—The face gives many indications in disease in its varied expressions. The expression of countenance is anxious in heart disease and acute abdominal disorders; sad and desponding in hypochondriasis; terrified in delirium tremens; full of rage in hydrophobia and mania. The countenance of extreme exhaustion and approaching death is technically called the *facies hippocraticæ*.

DELIRIUM is active in acute cerebral inflammation, passive in low fevers. Stupor may be due to alcoholic drunkenness, which may be distinguished by the breath; the stupor of opium-poisoning may be distinguished from this by the firmly-contracted pupil of the eye, and the absence of alcoholic odor. The stupor of typhus is known by its history; stupor of apoplexy and compression of the brain are not easily distinguished.

MODES OF DEATH.

1st. By *asthenia*; the vital forces of the system being exhausted, the heart ceases to beat.

2d. By *anæmia*; there being no longer a sufficient quantity of blood to sustain life.

3d. By *asphyxia*, or arrest of respiration.

4th. By *coma*; the brain being rendered incapable of sustaining innervation.

The causes of sudden death are apoplexy, valvular heart disease, rupture of the heart, bursting of an aneurism, suffocation, violent shock.

PHYSICAL DIAGNOSIS has been very properly called "*Organography*." The methods employed in physical exploration are called inspection, mensuration, palpation, succussion, spirometry, percussion, auscultation.

These methods are so complex, and the chapter of signs so

extended, that it would be impossible to give them in brief, and the student is respectfully referred to some one of the many excellent works on "Physical Diagnosis;" and having given in a very condensed manner the essential rational symptoms of diseased conditions of the human body, we shall proceed in like manner to state the symptoms characteristic of particular diseases to be dealt with in practice.

DISEASES.*

AFFECTIONS OF THE RESPIRATORY ORGANS.

PNEUMONIA.—*D.*, Inflammation of lung-substance; *V.*, single, double, lobular, according to seat; *S.*, commencing with a chill, followed by fever, oppressed breathing, dull pain in the chest, short cough, rusty expectoration, temperature high, secretions scant, delirium common; *C.*, exposure to cold, more especially when suddenly applied to chest, malarial influence, tuberculosis.

PLEURISY.—*D.*, Inflammation of pleura; *V.*, single, double, primary, traumatic, secondary; *S.*, cold stage or chill, sharp pain in the side, oppressed and rapid respiration, short, sharp cough, fever, pain intense by taking a long breath, and increased when lying on affected side; *C.*, ordinarily, exposure to damp and cold, also fractured ribs, punctured wounds, cancer, tuberculosis.

PULMONARY ABSCESS.—*D.*, Abscess of the lung; *S.*, all the symptoms of pneumonia, pleurisy, and phthisis may be present. A sudden cessation of all the acute symptoms, and a free, profuse, purulent expectoration decides the case. *C.*, inflammation or injury of the lung.

GANGRENE OF THE LUNG.—*S.*, Copious, brown, and very offensive expectoration, rotten breath, dyspnœa, extreme prostration; *C.*, violent inflammation of pneumonia, cancer in the chest, pyæmia, depraved state of the system.

PULMONARY EMPHYSEMA.—*D.*, Dilatation of the air-cells

* ABBREVIATIONS.—Capitals used denote as follows: *D.*, Definition; *V.*, Varieties; *Syn.*, Synonymes; *S.*, Symptoms; *C.*, Causes.

of one or both lungs; *S.*, dyspnœa, blueness of the lips; when severe, of the whole surface of the body; sometimes wheezing respiration; *C.*, prolonged asthma, chronic bronchitis.

BRONCHITIS.—*D.*, Inflammation of the mucous membrane of bronchial tubes; *V.*, acute, chronic, general, capillary, plastic, rheumatic, syphilitic; *S.*, depression followed by fever, tightness and soreness of upper and front part of the chest, cough at first dry, short, tight, later deep and loose; expectoration at first mucous, afterwards, if severe, purulent. Dyspnœa and tendency to depression and prostration more marked in capillary bronchitis. Cough, expectoration, slight dyspnœa without fever, characterize chronic bronchitis. *C.*, exposure to cold, mechanical irritation by inhaling foreign substances or noxious gases, rheumatic transference, tertiary syphilis.

ASTHMA.—*D.*, Paroxysmal and spasmodic dyspnœa; *V.*, primary, symptomatic, dyspeptic, and hay asthma; *S.*, dyspnœa is the characteristic symptom, wheezing respiration, expansion of the chest, anxious pallid countenance, perspiration copious, generally expectoration, at first difficult, usually thick, and in pellets; *C.*, primarily, predisposing or hereditary; exciting causes may be obnoxious inhalations, reflex nervous action, pulmonary or cardiac disease.

BRONCHIAL DILATATION is fortunately rare because incurable, and because of the troublesome cough and profuse mucopurulent expectoration is usually mistaken for phthisis.

LARYNGITIS.—*D.*, Inflammation or congestion of the mucous membrane of the larynx; *S.*, hoarseness, dry, short, harsh cough, soreness in breathing; when severe, fever, with "brassy" cough, distressing dyspnœa, difficult swallowing; *C.*, swallowing hot or acrid fluids, inhaling irritant gases, may accompany phthisis or secondary syphilis.

APHONIA.—*D.*, Loss of voice; *V.*, functional and structural, clergymen's sore throat; *C.*, functional aphonia may be hysterical, or enfeeblement and want of co-ordination of the vocal muscles; structural, when vocal cords are destroyed by ulceration, tumors, etc. Clergymen's sore throat is described as "follicular disease of the pharyngo-laryngeal membrane," and

is characterized by soreness, disposition to hawk and expectorate, with hoarseness or partial aphonia.

APHASIA.—*D.*, Loss of speech. Admitting the observations of Trousseau, and the subsequent speculations of Broca, that the seat of the faculty of language is "in the anterior frontal convolutions of the left hemisphere of the cerebrum," then softening or inflammation of, or injury to that part of the brain, would account for this disease.

LARYNGISMUS STRIDULUS.—*D.*, Closure of the glottis; *S.*, stridulous or shrill, whistling respiration. A disease of infancy, and occurs during dentition.

CROUP.—*D.*, Inflammation of the trachea; *V.*, inflammatory, pseudo-membranous; *S.*, a hoarse, barking cough, oppressed and audible respiration, spasm of the glottis and muscular coat of the trachea, and in the latter variety formation of false membrane in the larynx and trachea.

PLEURODYNIA.—*D.*, Intercostal rheumatism; *S.*, dull, heavy pain on one or both sides, increased by deep breathing or coughing, or motion of arms and trunk, without fever; *C.*, rheumatic diathesis.

INTERCOSTAL NEURALGIA.—*S.*, Sharp, lancinating, intermitting or periodical pains between sixth, ninth, and tenth ribs; *C.*, neuralgic diathesis.

THORACIC MYALGIA.—*D.*, Pain in the superficial muscles of the chest; *C.*, pressure, constrained position, ill nourishment, overwork.

PHTHISIS PULMONALIS.—*D.*, Tuberculous consumption of the lungs; this is by far the most important, because the most common and most fatal disease of the respiratory organs; *V.*, acute, chronic, and latent; *S.*, may be the sequelæ to any of the diseases already described, or may begin as a primary disease, with a slight hacking cough, or with a hemorrhage, both slowly increasing in severity (hemorrhage not always present), pains in the chest, pallor, accelerated pulse, increased temperature, chills followed by fever, emaciation, arrest of menstruation in females, night-sweats, diarrhœa; spirits of patient generally exalted and hopeful even to the last. Perhaps

we cannot do better than to quote here the description of this disease by the late Prof. N. Chapman :

“The cheeks are hollow, the bones prominent, the skin arid, the nose sharpened and drawn, the eyes sunken, with the adnata of a pearl color, destitute of vascularity, the lips retracted, so as to produce a bitter smile, and the hair thinned by falling out, the neck wasted, oblique and somewhat rigid or immovable, the shoulder-blades projected or winged, the ribs naked or exposed, with diminution of the intercostal spaces, and the thorax apparently narrowed; the abdomen flat, the joints, great and small, seemingly enlarged from the wasting of the integuments, the nails livid, and occasionally incurvated, the extremities œdematous; the angular points on which the body rests, in several points protruded through the skin,—the whole attended by a most afflicting cough, aphthæ, sore throat, difficult deglutition, and feeble, whispering voice, or entire extinction of it.”

C., Generally hereditary taint, most frequently found nearest sea-level. High, dry, and equable climates most exempt from it, even when cold. The disease is never found in Arctic countries, and is more prevalent in the Southern than the Northern States. Impure air, sedentary employments, excesses of all kinds, and everything that depresses vital forces are predisposing causes.

ORGANS OF CIRCULATION.

PERICARDITIS.—*D.*, Inflammation of the investing membranes of the heart; *V.*, primary and rheumatic; *S.*, fever, radiating pains from the heart, tenderness on pressure, pulse rapid, feeble, and irregular, short hacking cough, countenance anxious, sometimes nausea and vomiting, frequently delirium; as the end approaches, face livid and swollen, so also the hands and feet; *C.*, most commonly rheumatic fever, gout, and Bright's disease of the kidneys are also assigned as causes for it, but the proof does not seem to be clear.

ENDOCARDITIS.—*D.*, Inflammation of the lining membrane of the heart. Symptoms and causes same as in pericarditis.

Valvular disease, dilatation of the heart, fatty degeneration of the heart, can only be differentiated from other diseases of the heart by cranial or physical diagnosis.

Modes of sudden death in heart disease are enumerated as, 1, arrest of the heart's action from debility of the muscular walls; 2, spasm of the ventricles; 3, obstruction or regurgitation; 4, rupture; 5, heart-clot.

ANGINA PECTORIS.—*D.*, Disease of the nerves of the heart; *S.*, sudden attack of severe pain, extending from the heart, along the left arm, stricture in the chest, prostration and alarm; *C.*, organic disease of the heart, retrocedent gout.

EXOPHTHALMIC GOITRE is an uncommon disorder, involving an enlargement of the thyroid gland in the neck, overaction of the heart, and prominence of the eyeballs.

PALPITATION.—*V.*, Nervous, dyspeptic, rheumatic, hypertrophic. All these forms except the latter are purely functional. The hypertrophic form is organic, and may be distinguished from the functional forms by the fact that in enlargement of the heart active exercise causes great distress, dyspnœa, and great acceleration of the pulse.

CARDIAC EXHAUSTION.—*D.*, Muscular exhaustion of the heart; *S.*, rapid, weak pulse, greatly accelerated, with oppressed breathing, on even slight exertion, with no evidence of valvular or other organic disease of the heart; *C.*, over-fatigue, deficiency of rest and food.

ANEURISM OF THORACIC AORTA.—*S.*, Bulging of the chest, in which there is a pulsation, differing from the impulse of the heart, with a perceptible thrill, pain on pressure, cough, dyspnœa, aphonia, difficulty of swallowing.

ORGANS OF DIGESTION.

STOMATITIS.—*D.*, Inflammation of the mouth. *V.*, 1, Simple stomatitis; 2, aphthæ; 3, thrush; 4, ulceration; 5, gangrene; 6, salivation; 7, nurse's sore mouth; 8, scorbutic.

1. SIMPLE STOMATITIS.—*S.*, Redness, swelling, heat, and soreness of the tongue, gums, lining membrane of the cheeks,

palate, and fauces; *C.*, hot or corrosive liquids taken into the mouth.

2. *APHTHÆ*.—*S.*, Small white ulcers, following a vesicular inflammation of the mouth. The vesicles are small and oval-shaped, and contain serum, attended by fever and disorder of stomach.

3. *THRUSH*.—*S.*, A disease of infancy, and is characterized by a number of small whitish points in the mouth that run together, and discharge a whitish curd-like exudation; may be attended with fever, nausea and vomiting, mouth hot, stomach disordered.

4. *ULCERATION*.—*S.*, Begins on the cheeks, gums, and lining of the lips; may extend to the fauces. The ulcers are yellowish-white, painful, and their discharge gives an offensive odor to the breath.

5. *GANGRENE*.—*C.*, Extreme inflammation or ulceration of the mouth, morbid states of the system (crowd poison); *S.*, ash-colored ulcers, that soon begin to slough and discharge an acrid offensive fluid, breath very fetid, copious salivation, and unless the disease is checked spreads rapidly to the surrounding parts, followed by low fever, diarrhœa, prostration, death.

6. *SALIVATION*.—*D.*, Mercurial sore mouth; *S.*, "coppery" taste, soreness of the gums, tenderness of the teeth when pressed together, redness and swelling of the gums, with broad white line along their edges, and in severe cases ulceration and gangrene may follow.

7. *NURSE'S SORE MOUTH*.—*S.*, Begins with small, hard, painful swellings in the mouth, which ulcerate and cause considerable local and constitutional irritation; *C.*, it is peculiar to women nursing children, and to an advanced state of pregnancy.

8. *SCORBUTIC*.—See Scurvy.

TONSILLITIS.—*Syn.*, Quinsy; *S.*, beginning with sore throat, pain and swelling of one or both tonsils and fever; unless relieved, pain becomes constant and throbbing, swelling increases, swallowing difficult and painful in the extreme, and tonsillar abscess mercifully relieves the trouble.

PHARYNGITIS.—*D.*, Sore throat; *V.*, acute, chronic, ulcera-

tive. A sore throat is too common to need description; when the disease becomes chronic, the mucous membrane becomes permanently thickened, sometimes granulated and abnormally dry, and constantly sore. Ulcerative sore throat is rarely primary, but is a usual accompaniment of tuberculosis and secondary syphilis.

GASTRITIS.—*D.*, inflammation of the stomach; *S.*, pain in stomach, tenderness on pressure, constant nausea, restlessness, and fever. We have seldom simple gastritis. It usually assumes the form of a “bilious attack,” and involves the duodenum and liver. In which case there is usually vomiting of an acrid, greenish-yellow fluid, headache, dizziness, constipation, and fever.

ULCER OF THE STOMACH.—*S.*, Dull sickening pain in the stomach, increased by motion, food, especially when hot, and sugar, extreme local pain on pressure, frequent vomiting; vomiting of blood is an important symptom.

CANCER OF THE STOMACH.—*S.*, Pain, often excruciating, tenderness in proportion to pain, vomiting of a mixture of food, mucus, and blood, called from its appearance “coffee-grounds,” indigestion, acidity, fetid breath, constipation, emaciation, sallowness, sometimes fever. Detecting a tumor in the stomach would render the diagnosis almost certain.

DYSPEPSIA.—*D.*, A general name for functional and organic indigestion; a complex disease or series of diseases, having no distinct pathological name or place, with a symptomatology so diverse and varied as to almost defy systematization, and can only be stated in a general way. The dyspeptic feels his stomach all the time, without much pain or nausea, taste sour or bitter, sallow complexion, bowels costive, and stools generally of an ashen color; some of the complications are heartburn, water-brash, hypochondriasis, palpitation of the heart, headache, all manner of imaginary disorders. *C.*, Among the many causes of dyspepsia may be mentioned too much or too little, or improper food, imperfect mastication, too little or too much exercise, mental excitement or fatigue from excessive study, alcohol, opium, tobacco, improper medicines.

CONSTIPATION.—*C.*, Irregular attendance upon the calls of nature, want of exercise, and all the causes of dyspepsia, of which it is an almost constant symptom.

ENTERITIS.—*D.*, Inflammation of the bowels; *S.*, pain in the abdomen, or some part of it increased by motion or pressure, constipation, fever, followed by swelling of the abdomen, vomiting, and sometimes, when severe, a muco-purulent diarrhœa tinged with blood; *C.*, blows or other injuries, neglected constipation, exposure to cold and wet, corrosive poisons, intestinal obstructions.

PERITONITIS.—*D.*, Inflammation of the peritoneum; *S.*, pain and tenderness over the entire abdomen, greatly increased by motion, vomiting, constipation, tympanites, fever, with very rapid though not full pulse. In violent cases delirium, insomnia, collapse; *C.*, exposure to cold and wet, injuries, abscess of liver, opening of aneurism, perforation of the bowels, puerperal state.

COLIC.—*V.*, Flatulent, bilious, spasmodic, lead.

FLATULENT.—*S.*, Pain in the bowels without tenderness, abdominal distention, constipation, nausea, belching of wind.

BILIOUS.—*S.*, slower in coming on, with more nausea, vomiting of a yellowish fluid almost constant, some fever, some abdominal tenderness on pressure, commonly slight jaundice.

SPASMODIC.—*Syn.*, “Cramp in the stomach;” *S.*, comes on suddenly with extreme pain, with tendency to coldness and prostration; *C.*, generally of rheumatic or gouty origin.

LEAD COLIC.—*Syn.*, Painter’s colic, “dry belly-ache;” *S.*, abdomen shrunken and hard, intestines knotted without tenderness, no fever; suffering is intense, constipation is obstinate, fæces small, dry, and hard; a blue line along the edge of gums; *C.*, exposure to the poisonous influence of lead.

OBSTRUCTION OF THE BOWELS.—*V.* (As the long list of pathological varieties are discoverable only by post-mortem examination, and thoroughly obscure during life, they are omitted); *S.*, persistent constipation, constant vomiting of fæcal matter, coldness of the skin, prostration, distressed countenance, collapse.

CHOLERA MORBUS.—*S.*, Constant nausea and vomiting of a greenish or yellowish fluid, generally pain in the stomach and bowels, diarrhœa, debility, and coldness. If not soon relieved, cramps in the limbs follow, vomiting and purging become more watery, followed by collapse.

DIARRHŒA.—Is rather a symptom than a disease. *V.*, are irritative, as in dentition; inflammatory, as in inflammation of the bowels; symptomatic, as in typhoid fever; critical, as at the close of remittent fever; eliminative, as in poisoning; colliquative, as in consumption.

CHOLERA INFANTUM.—*Syn.*, Summer complaint; *S.*, diarrhœa, vomiting, rejection of food, debility, emaciation, coldness, and sometimes stupor.

DYSENTERY.—*D.*, Mucous-muscular inflammation of the large intestine; *S.*, pain, soreness, or tenderness on pressure or motion in the lower part of the abdomen, with frequent desire to go to stool, the discharges being scant, fecal, bloody, mucous, with griping and tenesmus; *C.*, relaxation from heat, sudden exposure to cold, improper food, unripe fruit, etc.

HEMORRHOIDS.—*D.*, Piles; *V.*, external and internal, varicose and fibrous, dry (or blind) and bleeding; *S.*, weight and sense of fulness in the rectum, soreness about the anus, pain in evacuating the bowels, pain in the groins and down the limbs. Throbbing and aching constant as inflammation increases, resulting in one or more distinct tumors, either external or internal. Bleeding occurs from internal piles; intense suffering is the usual concomitant of any form of hemorrhoids. *C.*, hereditary predisposition, plethoric constitution with sedentary habits, pregnancy, long standing, sitting on hard seats, excessive venery, self-abuse, over-stimulation, constipation, etc.

THE LIVER.

CONGESTION.—*S.*, A sense of weight and slight pain in the right side and under the right shoulder-blade, constipation, lead-colored stools, nausea, tongue furred, taste bitter, skin yellow, headache, and dizziness.

HEPATITIS.—*D.*, Inflammation of the liver is only the legitimate sequelæ to congestion, with the same symptoms in a little more aggravated form.

JAUNDICE.—*D.*, A morbid yellowness of the skin, eyes, etc. It is a "self-evident" disease, with no uniform pathology, cause, or symptoms.

CIRRHOSIS.—*Syn.*, Hob-nailed liver, Gin liver; *S.*, earliest symptoms are slightly yellow skin and eyes, furred tongue, nausea, indigestion; later on, constipation, vomiting, emaciation, debility, dropsy; *C.*, malarial influence, syphilis, most commonly intemperance.

Other affections of the liver are fatty liver, waxy liver, syphilitic liver, cancer of the liver, hydatids of the liver, tubercle of the liver; but as they are all incurable, and difficult to diagnosticate, they have only a post-mortem interest. This latter is also true of diseases of the gall-bladder and the spleen.

THE KIDNEYS AND BLADDER.

CONGESTION.—*S.*, Pain, with tenderness on pressure, on each side of the spine in the lumbar region, urine scanty and high colored, sometimes bloody; *C.*, exposure to cold, large doses of cantharides or turpentine, abdominal inflammation or obstruction.

URÆMIA.—*D.*, Urea in the blood; *S.*, suppression of urine, headache, dimness of vision, vomiting, diarrhœa, convulsions, stupor; *C.*, suppression of urine, and retention in the blood of urea, and perhaps other materials that should be carried off by the kidneys.

ALBUMINURIA.—*Syn.*, Bright's disease; *D.*, excess of albumen in the urine accompanied by dropsy; *V.*, acute and chronic; *S.*, of acute Bright's disease, chill, headache, nausea, vomiting, pain in back and limbs, dryness of the skin, oppressed breathing, followed by fever, and puffing with dropsical effusion of the whole body, urine scanty, with disposition to void it frequently, high colored and charged with albumen; *S.*, of chronic Bright's disease, gradual loss of strength, puffing of the face and extremities, and a slow, but sure, leading up to

all the symptoms of renal congestion and uræmic poison. The progress of the disease may be slow, and may be months, or even years, in reaching a climax, but the tendency is always towards a fatal result; *C.*, predisposing causes are intemperance, gout, constitutional syphilis, exposure to cold, scarlet fever, diseases of the kidneys, bladder, and urethra.

LITHIASIS.—*Syn.*, Gravel; *D.*, calcareous deposits in the kidneys or bladder; *S.*, pain in the bladder and in the back, itching in the glans penis, retraction of testicle, sudden stopping of the flow of urine.

DIABETES INSIPIDUS.—*Syn.*, Polyuria; *D.*, excessive urination; *S.*, excessive discharge of almost colorless urine (two to six gallons a day), intense thirst (withholding fluids does not lessen the excessive urination), skin hard and dry; debility and emaciation if long continued.

DIABETES MELLITUS.—*Syn.*, Glycosuria; *D.*, excessive urination, urine containing sugar; *S.*, beginning with all the symptoms of diabetes insipidus, the disease gradually simulates pulmonary consumption, and in that form the case terminates.

HYDRONEPHROSIS.—*D.*, Dropsy of the kidneys; *S.*, a soft, lobular, fluctuating, painless tumefaction in the hypochondriac, umbilical, and iliac regions, generally on one side; when extensive may result in uræmia, or bursting of the sac into the abdominal cavity.

CANCER OF THE KIDNEY.—*S.*, A tumor in the abdomen (sometimes enormously large), with copious discharges of bloody urine, is almost certain to be cancerous.

TUBERCLE OF THE KIDNEY.—*S.*, Recognized only after tubercles have softened by the abundant discharge of purulent urine, which, in the absence of tumor and bloody urine, distinguishes it from cancer.

CYSTITIS.—*D.*, Inflammation of the bladder; *V.*, acute and chronic, primary and secondary.

ACUTE CYSTITIS.—*S.*, Chills and fever, pain in the bladder, frequent desire to urinate, burning pain in the urethra, and tenesmus. The bladder felt as a small round tumor, painful

on pressure, urine scanty, and hot and scalding; as the disease progresses, nausea, delirium, cold perspiration, urine purulent, bloody, and fetid.

CHRONIC CYSTITIS.—*C.*, Frequent attacks of acute cystitis produce "chronic inflammation," which is characterized by less severe symptoms, but which, in consequence of the constant desire to urinate, with tenderness and irritation of the bladder, may be still very distressing.

RETENTION OF URINE.—*C.*, May be the result of obstruction, spasmodic contraction of the urethra, stricture, paralysis.

ENURESIS.—*C.*, Incontinence of urine, unless from some local disease or paralysis, is generally confined to children, and usually at night.

BRAIN AND NERVOUS SYSTEM.

INFLAMMATION OF THE BRAIN.—*S.*, Intense headache, face and eyes livid, dizziness, "tinnitus aurium," sensitive to light and sound, restlessness, insomnia, delirium, convulsions, sometimes followed by paralysis.

HYDROCEPHALUS.—*D.*, Dropsy of the brain; *S.*, languor, strabismus, convulsions, loss of appetite, enlargement of the head, emaciation of the body, mental dulness.

SOFTENING OF THE BRAIN.—*V.*, Inflammatory and atrophic; *S.*, muscular rigidity, or paralysis of the extremities, without loss of consciousness; partial coma would indicate inflammatory softening.

ATROPHIC SOFTENING.—*S.*, Indicated by a gradual tendency to blindness, loss of hearing, failure of mental powers, neuralgic pains in the extremities, followed by numbness or paralysis; *C.*, old age, intemperance, mental excitement, blood-clot on the brain.

SPINAL MENINGITIS.—*D.*, Inflammation of the spinal marrow; *S.*, intense pain in the back, increased by motion, muscular rigidity, followed by fever, constipation, dysuria, paralysis.

SOFTENING OF THE SPINAL CORD.—*S.*, Uncertainty in stepping and a sense of insecurity in walking, numbness and a sense of coldness in the extremities, pain, especially on pressure,

in a portion of the spine, impaired motion, and gradual diminution of sensibility in the limbs. Muscular contraction and rigidity occurs as the disease advances, finally loss of control over the bladder and rectum, and exhaustion.

SPINAL IRRITATION.—*S.*, There may be pain and weakness in the back, tenderness on pressure, unattended by motor or sensory degeneration, and with no proof of any special disease of the cord; *C.*, are really of rheumatic or myalgic origin, and may arise from anæmia or general nervous debility.

OPHTHALMIA.—*D.*, Inflammation of the eye; *V.*, 1, simple and catarrhal; *S.*, eyes bloodshot, with soreness, pain, and aversion to light, and a mucous discharge, that causes adherence of the lids to each other, especially at night; *C.*, exposure to cold and damp.

2. PUSTULAR.—*S.*, Formation upon the conjunctiva of small vascular pustules.

3. PURULENT.—*C.*, This variety is doubtless infectious and may be communicated.

4. GONORRHEAL.—*C.*, Contact with the virus of leucorrhœa or gonorrhœa; is also infectious; suppuration, ulceration, and sloughing are concomitants.

CORNEITIS.—*D.*, Inflammation of cornea.

SCLEROTITIS.—*D.*, Inflammation of sclerotic coat.

IRITIS.—*D.*, Inflammation of iris.

RETINITIS.—*D.*, Inflammation of the retina. All these inflammations may be simple, traumatic, gouty, rheumatic, scrofulitic, syphilitic.

OTITIS.—*D.*, Inflammation of the ear; *C.*, of scrofulitic origin; *S.*, suppuration and chronic discharge, attended with severe pain; but the tenderness on pressure and the subsequent discharge distinguishes it from otalgia.

OTALGIA.—*S.*, Earache without much inflammation, yet attended by intense pain; *C.*, neuralgic.

COPHOSIS.—*D.*, Deafness. Causes are,—

1. Accumulation of wax in the ear.
2. Thickening of the tympanum.
3. Obstruction of the Eustachian tube.

4. Perforation of the tympanum.
5. Destruction of the bones of the ear.
6. Paralysis of the auditory nerve.

SUNSTROKE.—*S.*, Falling, insensibility, head hot, temporal arteries distended, pulse full, breathing stertorous, convulsions (in severe cases); *C.*, fatigue from over-exertion in the sun or heat; in this condition copious draughts of cold or iced water increase the danger. Intemperate people are predisposed to it, and frequently the health is permanently impaired.

INSOMNIA.—*D.*, Wakefulness; reference is had to a morbid wakefulness not dependent on pain or diseases affecting the brain, and may be induced by excesses of all kinds, mental labor, emotional excitement; coffee, tea, belladonna, stramonium, cannabis Indica, may cause it.

NIGHT-TERRORS.—This trouble is too commonly known to need description. A child suddenly wakes out of an apparently sound sleep with a cry of terror and alarm, imagining all sorts of hideous things; finally flings itself sobbing in its mother's arms, and is gradually restored to quiet. It is generally agreed that this is not a cerebral trouble, but that the mind is affected by reflex action from some gastric or intestinal irritation.

APOPLEXY.—*D.*, Profound coma or insensibility, suddenly produced, and not traceable to either injury, narcotism, or poison; *V.*, congestive and hemorrhagic; *S.*, congestive apoplexy manifests itself by flushed appearance of face and eyes, heat of head, throbbing and distention of the carotid and temporal arteries, fulness of jugular veins, languor, drowsiness, dimness of sight, vertigo, headache, followed by sudden stupor, stertorous breathing, turgidity of the face, slight convulsive movements, pulse full and slow.

HEMORRHAGIC APOPLEXY.—*S.*, Ordinarily no premonitory indications. It is literally a stroke, and in an instant insensibility is complete; when recovered from, hemiplegia usually remains. All the symptoms of congestive paralysis are present, except that fulness of blood-vessels and heat of head are less marked. *C.*, in the congestive form vascular pressure on

the brain is the exciting cause. In the hemorrhagic form, the rupture of a blood-vessel in the cerebrum, cerebellum, or ventricles, and the formation of "blood-clot." Age is a predisposing cause, so also are excesses of all kinds, especially in florid, short-necked, obese people.

PARALYSIS.—*V.*, According to cause, 1, cerebral; 2, spinal; 3, reflex; 4, toxæmic; 5, hysterical. According to parts affected, facial or other local paralysis, hemiplegia, paraplegia, general.

FACIAL PARALYSIS.—*C.*, Affection of the motor nerve of the face, and is usually due to inflammation (rheumatic) of the sheath of the nerve, near the stylo-mastoid foramen; *S.*, one side of the face is expressionless, and the eye on that side remains open. Pressure on, or disease of any nerve, may cause paralysis to the part it communicates with, until pressure or disease is removed; from this cause we may have loss of sight, of hearing, of taste, of smell.

HEMIPLEGIA.—*D.*, Paralysis, or loss of motion and sensation of one side of the body; *C.*, usually blood-clot, tumor, or softening of the brain.

PARAPLEGIA.—*D.*, Paralysis of the lower extremities; *C.*, injury or disease of the spinal cord; *S.*, pain in the back, numbness of the feet, and a gradual (sometimes sudden) loss of motion and sensation in the lower extremities. If the disease of the spinal cord is progressive, so also will be the paralysis, and may finally involve the bladder and rectum.

HYSTERICAL PARALYSIS.—This is one of the many remarkable forms of nervous phenomena manifested in that unexplained and unexplainable disease, hysteria, and may simulate any form of paralysis, and can only be differentiated by the history of the patient.

REFLEX PARALYSIS.—*D.*, Paralysis without any apparent brain or spinal lesion, and may be caused by nervous dysentery, diarrhœa, uterine irritation, teething, external injuries, diphtheria, scarlatina, disease of the kidneys.

DIPHTHERITIC PARALYSIS.—*D.*, The muscles used in swallowing, speaking, and sometimes of the upper and lower ex-

tremities, and sense of sight may become partially paralyzed after the termination of a severe attack of diphtheria. *C.*, doubtful.

SYPHILITIC PARALYSIS.—*D.*, Obscure paralysis, with no apoplectic symptoms in syphilitic constitutions. But of undoubted existence.

LEAD PALSY.—*C.*, By exposure to lead-poisoning; *S.*, commences with the muscles of the forearm; blue line along the edge of the gums; pain attends the beginning of and recovery from the paralysis.

PARALYSIS AGITANS.—*D.*, Shaking palsy; *S.*, a constant involuntary shaking of the head, hands, and arms, and more or less of the whole body.

WASTING PALSY.—*D.*, Muscular atrophy; *S.*, the muscles of one limb or the whole body lose their power and waste away.

LOCOMOTOR ATAXIA.—*Syn.*, Duchenne's disease, "Ataxie locomotrice progressive." *S.*, A gradual loss of muscular co-ordination, preceded by rheumatic pains, sometimes strabismus, and incontinence of urine; gradually the gait becomes unsteady and awkward, feet become numb, and walking is insecure, usually resulting in complete general paralysis.

PARALYSIS OF THE INSANE.—*D.*, Difficulty of speech, general tremor, gradual loss of motion and sensation characterize it.

EPILEPSY.—*D.*, Periodical convulsions; *S.*, a creeping, blowing sensation like a current of air or a stream of water, commencing in the hand or foot and creeping towards the body, is called the "epileptic aura." With a scream the patient falls down in violent convulsions; foaming at the mouth, grinding of the teeth, rolling of the eyeballs, sometimes vomiting, or involuntary discharges from bladder or rectum, are common symptoms. *C.*, Hereditary transmission, intemperance, excessive venery, self-abuse, blows on the head, and fright are common causes.

CATALEPSY.—*S.*, Unconsciousness, fixed rigidity of all the voluntary muscles.

CONVULSIONS.—1. Infantile; *C.*, constipation, indigestion, worms, irritation of the gums, excitement of the brain.

2. Epileptic. (See Epilepsy.)

3. Parturient and puerperal. It is claimed that about one woman in fifty has more or less albuminuria from congestion of the kidneys, caused by pressure of the uterus upon the renal veins, and that about one in ten of these will have convulsions, either during pregnancy, in labor, or after delivery.

CHOREA.—*Syn.*, St. Vitus's Dance; *S.*, Jerking, irregular motion of the voluntary muscles, that is not controlled by the will. Speech may be affected, writing and work impossible when cases are severe, because hands cannot be controlled; palpitation, constipation, indigestion, dilatation of the pupil, are all more or less constant symptoms; *C.*, preceding nervous debility being regarded as a predisposing cause, fright, over-fatigue, mental excitement, blows or falls, rheumatic fever, may produce it.

TETANUS.—*Syn.*, "Lock-jaw." *S.*, Beginning with stiffness and rigidity of the muscles of the jaws, it extends to the face, trunk, and limbs. May be forward, backward, or lateral arching of the body; mastication of food impossible, so also swallowing; respiration very difficult; intense suffering and insomnia without delirium.

HYDROPHOBIA.—*S.*, Having been bitten by a rabid animal, say in a month or longer, the wound being apparently thoroughly healed, an unaccountable irritation is felt in the cicatrix, nervous restlessness ensues, which increases to a wild, ungovernable, angry delirium. Spasmodic stricture of the throat causes a choking sensation, aggravated by an effort to swallow, or even by a sound or flash of light, or current of air. The dread of water is a myth, and only the dread of swallowing makes the unfortunate sufferer shrink from any liquid.

HYSTERIA.—*D.*, "A morbid excitability of the whole nervous system," so varied in its manifestations of nervous phenomena that almost every disease in the entire nosological system may be simulated. *S.*, a "fit of hysterics;" generally commences with a choking sensation (*globus hystericus*) as of a ball coming up

in the throat; crying, laughing, epileptiform convulsions, paralysis, palpitation, aphonia, retention of urine, hemorrhages, phantom tumor, are among the many manifestations of hysteria; *C.*, frequently obscure, probably most generally due to uterine or ovarian disease.

NEURALGIA.—*D.*, Literally, nerve-pain. Different names are given according to locality affected, as follows: tic douloureux, the face; hemierania, one side of the head; sciatica, the hip; gastrodynia, the stomach; pleurodynia, the side; angina pectoris, the heart; odontalgia, the teeth.

DELIRIUM TREMENS.—*S.*, Insomnia, debility tremors, horrors, hallucinations,—*e.g.*, the patient imagines himself pursued by serpents, demons, and mortal enemies, etc. Not infrequently the hallucinations may be of an amusing character. *C.*, may result from two entirely opposite causes: 1, accustomed stimulation suddenly withdrawn; 2, excessive stimulation continued in.

METHOMANIA.—*Syn.*, Alcoholism; *V.*, periodical, when the uncontrollable desire for alcoholic drinks comes on periodically, with intervals of weeks or months perhaps of comparative freedom from the irresistible cravings of this disease; persistent, when the mania for drink continues without cessation; *C.*, hereditary transmission; long continued and wilful excesses may confirm the habit.

INSANITY.—*V.*, 1, Mania, a perversion and derangement of all the mental faculties; 2, monomania, partial derangement, as desire to commit homicide or suicide, propensity to steal, commit arson; 3, melancholia, excessive depression or gloom, not traceable to any known cause; 4, dementia, a weakening; loss or wreck of mental faculties (idiotcy is congenital dementia). *C.*, hereditary transmission the most common, diseases of the brain, injury of the head, intemperance, misfortunes, mental excitement, domestic troubles.

HEMORRHAGES (flow of blood).—Hemorrhage is active when there is an excessive determination of blood to a part; passive when, through inaction of the circulation or weakness of the blood-vessels, the blood is not carried through its proper channels; traumatic when caused by wounds, or severing of

the blood-vessels; symptomatic when occurring in connection with certain diseases, as bleeding of the nose in typhoid fever, bleeding of the lungs in phthisis, vomiting of blood in cancer of the stomach, bleeding from the bowels in hemorrhoids, etc.; critical, as at the close of yellow fever or remittent fever; vicarious when it follows as a substitute the suppression of a normal or habitual discharge, as in suppressed menstruation or sudden arrest of bleeding hemorrhoids, and manifests itself generally in the form of epistaxis, hæmatemesis, and hæmoptysis.

HÆMOPTYSIS.—*D.*, Spitting of blood; when from the air-tubes, it is attended with difficult breathing; *S.*, the blood is coughed up, is florid, and sometimes frothy and mixed with expectoration.

HÆMATEMESIS.—*D.*, Vomiting of blood, when from the stomach; *S.*, there is nausea, the blood is vomited up, is dark and mixed with food.

HÆMATURIA.—*D.*, Bloody urine may be from the kidneys or bladder. If thoroughly mixed with urine, it is probably from the kidneys, and may be due to venal congestion, or inflammation, or cancer; when the urine flows nearly pure and the blood follows, it is from the bladder or urethra.

INTESTINAL HEMORRHAGE.—*C.*, May be bleeding hemorrhoids, in which case the blood is bright red; in other hemorrhages, as from typhoid, yellow, or remittent fever, or aortic aneurism, congestion of the liver or abdominal cancer, it is dark and mixed with feces.

UTERINE HEMORRHAGES.—*C.*, may be excessive menstruation, placenta prævia, abortion, uterine cancer, ulceration of the mouth or neck of the uterus, tumors.

DROPSY.—*V.*, General and œdema; *D.*, tumefaction arising from the effusion or infiltration of serum into cellular or connective tissue; *C.*, one of three cardinal pathological conditions:

1. Obstruction to the venous circulation.
2. Arrest of excretion and absorption.
3. Excess of water in the blood.

ANASARCA.—*D.*, General cellular dropsy; *C.*, suppression of the action of the kidneys and skin at once by the powerful impression of cold or wet, or the poison of scarlet fever.

ASCITES.—*D.*, Peritoneal dropsy; accumulation of water in the abdomen; *C.*, cirrhosis of the liver, and diseases of the kidneys, heart, aorta, and spleen; *S.*, emaciation, general debility, with great abdominal enlargement, evenly distributed over the abdomen.

OVARIAN DROPSY belongs properly to gynæcology; we may say of it, however, that it may be distinguished from ascites by its first appearing on one side, its progress is much slower, and the enlargement is more globular and coherent, and less fluctuating. Other local dropsies are hydrocephalus (of the brain), hydrothorax (of the chest), hydropericardium (of the heart-case), hydronephrosis (of the kidney), hydrocele (of the testes).

ZYMOTIC DISEASES.

V., Contagious, epidemic, endemic, and infectious.

VARIOLA.—*Syn.*, Smallpox; *S.*, languor, headache, vomiting, severe pain in the back, fever; three days after fever a small red pimply eruption appears, first on face, then on neck, arms, body, and lower limbs, these pimples become vesicles, then pustules. Complete suppuration about ninth day after fever, and in about five days the scabs begin to drop off.

The stages are about twelve days of incubation, three of primary fever, six for development of eruption, five for scabbing, seven for falling off of scabs. A very offensive and characteristic odor is peculiar to this disease. *C.*, is communicated by contagion, and as a rule occurs but once in a lifetime, but to this rule there are exceptions.

VARIOLOID.—A very modified form of smallpox, to which persons who have been vaccinated are liable when exposed to the contagion of smallpox. The fever is generally slight, and the pustules are seldom so deep as to form pits.

VARICELLA.—*Syn.*, Chicken-pox. This is a mild eruptive disease, also contagious; *S.*, manifests itself four or five days after exposure in the form of widely-scattered pimples, that

come out in successive crops on different parts of the body. The second day after the pimples appear they become vesicles filled with lymph, that scab in a few days, and soon fall off without pitting.

SCARLATINA.—*Syn.*, Scarlet fever; *V.*, simple, complicated with sore throat, and malignant; *S.*, stage of incubation after exposure about five days, then follow lassitude, loss of appetite, headache, pains in back and limbs, fever, soreness of throat, followed by a punctuated red eruption of a scarlet, sometimes brick-red, hue on face and neck, which soon spreads over the whole body, fever high, rapid pulse, great thirst, with burning soreness in the throat and over the body, tongue covered with strawberry-like red papulæ peeping through the white fur that covers it. In the simple form all the conditions may be very mild. In throat complication (*scarlatina anginosa*) there will be violent inflammation and swelling of the tonsils, resulting in suppuration, with a sometimes very acrid and offensive discharge. Sometimes the ulceration extends to the Eustachian tube, resulting in permanent deafness.

MALIGNANT SCARLATINA.—*S.*, An aggravation of all the symptoms of scarlatina, in which the throat may be little affected, but where the whole system seems to be overwhelmed with the poison of the disease, depression without reaction, resulting in stupor, and not unfrequently in a few hours in death; prostration, hemorrhage from stomach or bowels, vomiting, diarrhœa, all tending towards a fatal issue.

MEASLES.—*S.*, Stage of incubation from ten to fifteen days after exposure to the contagion; begins with all the symptoms of a cold,—running at the nose, red, watery eyes, cough; after about four days there appears, first on the face and then distributed in irregular crescentic-shaped patches over the body, a rash that is easily distinguished from scarlatina by being less bright in color, and accompanied by a much less degree of fever and general constitutional disturbance.

RUBEOLA.—*D.*, Hybrid between scarlatina and measles. Such a disease does undoubtedly exist, in which the two diseases are so nicely balanced as to render the most experienced

physician doubtful of his diagnosis in calling it either one or the other.

MUMPS.—*S.*, Contagious inflammation of the parotid gland, which swells and becomes hot, painful, and tender to the touch; one or both may be affected, either simultaneously or after an interval of years. It is doubtless contagious, but not dangerous, unless when by metastasis it is transferred to the breast, testicles, or brain, which may be avoided by guarding against taking cold.

WHOOPIING-COUGH.—*S.*, Six days of incubation, after exposure, are followed by symptoms of a cold, with slight fever and a cough, which soon shows its specific character by being paroxysmal and whooping. It is a self-limited disease, but seldom ends in less than six weeks, and sometimes lingers for months.

DIPHTHERIA.—*S.*, A few days of indisposition, slight sore throat, swelling of glands behind the jaw, fever, headache, furred tongue, constipation, difficulty of swallowing, palate, tonsils, and fauces swollen, red or purple. Soon a whitish or yellowish-white membrane appears over one or both of the tonsils. All the symptoms of pseudo-membranous croup may here follow, or it may assume an ulcerated form and become "putrid sore throat," or a malignant form with all the symptoms aggravated, and followed by prostration, coma, and death.

GLANDERS.—This is a disease peculiar to the horse, but may undoubtedly be communicated to man; *S.*, manifests itself in from two to seven days after exposure, by fever, inflammation of the nostrils, pains in the joints, patches of red skin that may become gangrenous, pustules on the face and limbs, inflammation of nostrils becomes ulcerous and even gangrenous, discharging a muco-purulent fluid; throat and lungs may become involved, the face becomes cedematous; diarrhoea, delirium, coma, and death.

INFLUENZA.—*Syn.*, Epidemic catarrh. Common as catarrhal affections are, there is an occasional epidemic form of this disease in which the symptoms of a "bad cold" are all aggravated.

and affect a whole community to an extent that is hardly accounted for by ordinary climatic conditions. It is rarely fatal except among very old people.

INTERMITTENT FEVER.—*Syn.*, Ague, chills and fever; *S.*, First, or cold stage.—After a short period of languor and yawning, a cold, creeping, shivering sensation ushers in the chill, which may last from ten minutes to three hours.

Second, or hot stage.—A sense of warmth gradually returns, which resolves itself into a hot or dry fever, more or less violent, with accompanying headache, often vomiting; mouth dry and tongue furred. This stage may last from one to sixteen hours, and is followed by the third, or sweating stage, which is somewhat gradual in its approach; face first becomes moist, soon the whole body, the fever subsides, headache lessens, and, with a profuse perspiration, the patient is likely to sink into a quiet, peaceful slumber, and all goes well until the intermission is passed and the first stage returns, which may be in one, two, three, four, five, six, seven, or eight days. *C.*, it may reasonably be called an autumnal fever, as comparatively few cases occur at any other time of the year, and is the result only of malarial influences, near sea-level, and near marshes, shallow lakes, and sluggish streams.

REMITTENT, OR BILIOUS FEVER.—*S.*, First general indisposition, slight headache, nausea, furred tongue, followed by a chill lasting for perhaps an hour; after this comes fever, skin hot, dry, harsh, pulse accelerated, face flushed, head aching and throbbing, violent pain in back and limbs, nausea and vomiting of bilious matter common, bowels costive and stools colored with bile, and thirst great. There is an abatement of these symptoms, at least in severity, in from eight to twenty hours; after from six to twenty-four hours of comparative comfort the chill again comes on, and all the conditions are more aggravated than at first, and then follows a succession of periodical paroxysms that must vary with the history of the case; if uncomplicated, it may terminate favorably in a week; but when, as sometimes happens, inflammations, such as of the brain, lungs, stomach, liver, spleen, or bowels, intervene, the

history will be correspondingly grave. *C.*, same as intermittent fever.

PERNICIOUS FEVER.—*D.*, This is only a malignant form of intermittent or remittent fever, and may begin with the typical symptoms of either of the fevers named. *S.*, After several days the skin grows livid, pale, and shrunken, sometimes suffused with a cold, clammy sweat, tongue pale or cold, thirst intense, internal heat, nausea, and vomiting of mucus, or even bloody fluid, diarrhœa, stools of bloody water, pulse small, weak, rapid, or irregular, mind clear when brain is not implicated; in the latter case symptoms are drowsiness and hesitation of speech; stupor, stertorous breathing, or tetanic spasms, mark the climax of the spasm. If this paroxysm is not fatal, there is partial or perhaps complete reaction. If another paroxysm occur the next day, it will be more aggravated and dangerous than the first. Still, it may be recovered from. But a third return is generally fatal.

YELLOW FEVER.—*S.*, Beginning abruptly with an indistinct chill, pains in the back or limbs, a period of fever of long average duration intervenes; skin hot and dry, thirst extreme, tongue furred, nausea and vomiting common, with great tenderness over the stomach, discharges of the bowels (if any) very offensive, headache intense, with flushed forehead and eyes, delirium not uncommon. Then follows a stage that amounts almost to an intermission, with an abatement of all the symptoms except the extreme tenderness of the stomach; convalescence may follow. More frequently, however, a third stage of prostration or collapse follows, in which the black vomit—the characteristic symptom of this fever—occurs, and hemorrhages from mouth, throat, or bowels, low muttering, delirium, hiccough, clammy sweats, involuntary discharges, dissolution. *C.*, In regard to the cause, the only well-settled point is that it is zymotic. Many and exhaustive papers have been written *pro* and *con* on all the complex questions relating to this fatal malady, but our space is too limited to even notice them.

CEREBRO-SPINAL FEVER.—*Syn.*, Cerebro-spinal meningitis, spotted fever; *S.*, attack always sudden, chills, terrible pain in

the head, extending to back of neck, nausea and vomiting, followed by delirium, sometimes coma, more frequently tetanic spasm of the muscles of neck and back, whole surface of body painfully sensitive; loss of sight and hearing may occur early in disease; spots do appear in some cases on the body and limbs, but in a minority of cases; fatal cases seldom last over a day or two; not often fatal after the fourth day.

TYPHUS FEVER.—*Syn.*, Ship, camp, and jail fever; *S.*, several days of weakness, headache, and loss of appetite, then chilliness, in which stage death may occur; more frequently, however, fever follows, with severe headache, skin very hot, pulse 120 to 130, delirium common, extreme muscular debility, patient lying in a half stupor, easily aroused, however, but soon relapses, face has dusky flush, hardness of hearing. Positive coma a bad indication.

TYPHOID FEVER.—*S.*, Approaches more gradually than any other fever, and with the general symptoms of fever, bleeding at the nose and a bronchial cough are characteristic symptoms; fever of some violence sets in; face dark and flushed; hardness of hearing common after first week; so also swelling of the abdomen; a few rose-colored spots on the abdomen only are discernible after second week; final symptoms in severe cases are double pulse, subsultus tendinum, retention of urine, hemorrhage from the bowels, hiccough, cold sweats, involuntary discharges.

ERYSIPELAS.—*S.*, The eruption commences most frequently on the face, with soreness, redness, heat, and moderate swelling, which spread like a slow fire, and may cover the whole body. When deep-seated, may cause suppuration and sloughing.

CHOLERA.—*S.*, Commences commonly with a painless, watery diarrhœa, which in a short time increases in frequency and copiousness, and becomes like "rice-water," vomiting commences, skin grows cold, and cramps in the limbs, with great debility, follow. If not checked collapse comes on, with intense thirst, oppressed breathing, loss of voice and pulse, suppression of urine, skin cold, blue, and shrunken, breath cold, ending in

death ; the average duration being eighteen hours, but varying from ten minutes to a day or two.

DIATHESIS.—*D.*, Morbid peculiarity of constitution.

RHEUMATISM.—*S.*, High fever, with severe inflammation of the joints, mostly the shoulders, wrist, knees, and ankles, pulse full and rapid, but after first week skin usually bathed in perspiration. Chief danger is metastasis to heart or lungs.

CHRONIC RHEUMATISM.—*S.*, Most common in old age. It is a slow inflammation of the fibrous tissues that invest the joints and muscles, following exposure to cold and wet ; pain worse at night.

SYPHILITIC RHEUMATISM.—*D.*, Affection of the shafts of long bones, on which are abnormal nodes, and the pain is likely due to periosteal inflammation.

RHEUMATIC ARTHRITIS.—*D.*, Chronic inflammation of one or more large joints, resulting in effusion into the joints, with deformity and lameness.

MYALGIA.—*D.*, Simply muscular pain as the result of debility or fatigue.

GOUT.—*D.*, A constitutional, paroxysmal disorder, that manifests itself in local inflammatory affections ; *S.*, flatulent acidity, constipation, palpitation, usually usher in an attack of gout, then a joint (usually the great toe) becomes very painful, swollen, red, and tender. The small joints are all more likely to be attacked than the large ones. The pain is usually very intense, but mercifully, its duration is commonly only a few days. Retrocedent gout (so called when some internal organ is affected), especially when the heart is the seat of it, is very dangerous. *C.*, primarily the gouty diathesis ; high living, with indolent habits, excess of animal food, strong wines and malt liquors, are all exciting causes.

SCURVY.—*S.*, Languor, debility, low spirits, followed by swelling, sponginess, and bleeding of the gums ; teeth loosen, breath offensive, palpitation and dyspnoea, swelling of the limbs, diarrhoea and dysentery, emaciation and debility, are all concomitants ; *C.*, deprivation of fresh food, especially vegetables, and cold, fatigue, exposure, and homesickness.

SCORBUTIC DYSENTERY.—*D.*, A sequela to scurvy.

SCROFULA.—Prof. Aitken defines scrofulosis or tuberculosis as follows:

“A particular morbid condition of the system, attended by a persistent increase of temperature, followed by a continuous wasting of the body and the growth of a substance in various tissues and organs, especially the lungs, to which the name of tuberele or tuberculous matter has been applied. These phenomena are associated with peculiarities of outward appearance during life, and liability to certain diseases termed scrofulous, such as swellings of lymphatic glands and of joints, carious ulcerations of bones, frequent and chronic ulcerations of the cornea, ophthalmia, abscesses and cutaneous pustular eruptions, persistent swelling and catarrh of the mucous membrane of the nose, and characteristic thickening and swelling of the upper lip,—lesions which, while they are distinguished by mildness of symptoms, are peculiarly persistent, and follow the application of exciting causes which would have no effect on a healthy person.”

RICKETS.—*D.*, General failure of nutrition, with muscular debility, bones brittle from imperfect development, spinal curvature and crooked limbs follow, teeth slow in appearing and decay early; nervous irritability a usual accompaniment.

CARIES OF THE SPINE.—*Syn.*, Pott's disease; *S.*, pallor, debility, pain in the abdomen, in sudden and severe paroxysms, irritability of temper, stooping forward in walking, rigidity of muscles, a cautious, gliding gait, to avoid concussion of the spine, loss of appetite, swelling of the belly, uneasy sleep, hurried or impeded respiration, tenderness of the spine on pressure, an angular deformity or backward projection of a portion of the spine, paralysis in various degrees, abscesses of the back, discharging externally, or by the lungs, bowels, vagina, or the pus entering the hip-joint.

MORBUS COXARIUS.—*Syn.*, Hip-joint disease; *S.*, of the most characteristic kind are pain in the knee, without any other sign of disease about that part, a limping gait, the knee bent, treading only on the toes of the affected limb. Examining the

hip-joint, it is found that pressing the head of the thigh-bone into it gives pain. Atrophy of the muscles over the hip may follow. General weakness and emaciation, with other symptoms of the scrofulous cachexia, usually attend. Suppuration in the joint, with chronic abscesses, ulceration of the cartilages, subluxation of the femur, and caries of the bones, with hectic fever and progressive debility, occur in severe cases."

ANÆMIA.—*D.*, Bloodlessness; *S.*, pallor, debility, nervous irritability, palpitation; *C.*, loss of blood, excessive drains on the system, as suckling, leucorrhœa, diarrhœa, fevers, deficiency of food, light, warmth, or fresh air.

CHLOROSIS.—*Syn.*, "Green sickness;" *S.*, waxy, yellowish or greenish pallor of the face, with all the symptoms of anæmia, morbid appetite; menstruation usually absent.

PYÆMIA.—*D.*, Absorption of pus; *S.*, of such an affection are chills, low fever, rapidity and feebleness of the pulse, prostration, delirium, and swelling of the joints. Death may occur in a few days, from devitalization of the blood; or, if purulent formations occur, by exhaustion caused by their presence and discharge.

SKIN DISEASES.

ERYTHEMA.—*D.*, Superficial red patches of variable size, slightly irritated and inflamed, from friction of two surfaces of the skin, as occurs sometimes in not well-cleaned children; sometimes also in rheumatic fever. Chilblain is one form.

URTICARIA.—*Syn.*, Nettle-rash; elevated red or white, round or oval-shaped, patches appear very suddenly on the body (seldom in the face), and burn and sting and itch, and may disappear as suddenly. It is of short duration, but may become chronic, when it is very troublesome.

ROSEOLA.—*S.*, Dark red damask-rose-colored patches appear on the body, with little or no fever, and last only a few days.

LICHEN.—*S.*, Small red, irritable pimples appear on the face and neck, involving depositive inflammation. Prickly heat is one form of it, from which children especially suffer in the heat of summer.

STROPHULUS.—*Syn.*, Red gum. *D.*, A papular eruption, consisting of many small red pimples all over the body. *S.*, gums red, swollen, and tender; *C.*, indigestion, teething, too much clothing.

ECZEMA.—*S.*, Small water-blisters that may be very simple, attended with little inflammation or soreness, or there may be increased inflammation, redness, heat, swelling; the vesicles break, run together, form scabs that run all over the face, cracks are formed that ooze serum and lymph, sometimes pus.

HERPES.—*S.*, Blisters large and widely separated; when on the lips or face, called "fever blisters." One form of it appears mostly about the waist, the blisters appear on an inflamed surface, attended with intense itching and burning, sometimes with neuralgic pains; sometimes it appears in the form of circular patches, the blisters forming in rings; differing from ringworm in being more easily cured, and the parasite of ringworm absent.

BULLÆ.—*S.*, Large blisters, oval-shaped, from a half to several inches in diameter, and flat; may ulcerate, but only in vitiated or unhealthy constitutions. After the blisters mature they burst or dry up, leaving a thin brown scab. Another form is where the blisters are smaller, thicker; conical-shaped scabs appear after the blisters burst, that drop off and leave a small, red, angry, obstinate ulcer. This form is called *rupia*. Syphilitic *rupia* is very common.

ECTHYMA.—*S.*, Large, round, prominent pustules that suppurate, and end in thick dark scabs that drop off, leaving an ulcerative surface, that generally heals readily, but may become chronic.

IMPETIGO.—*S.*, Small, numerous pustules, commonly on the face, that may run together and scab. *Crusta lactea* is the name given by authors to this form of disease in nursing infants.

SCALY DISEASES.—*S.*, 1. *LEPRA*, characterized by red, scaly patches of various sizes, especially on arms and legs, the margin of the patches being the highest, reddest, and most scaly.

2. *ICHTHYOSIS.*—*Syn.*, Fish-skin disease. Hard, thick, dry scales, without redness, soreness, or even itching, that may spread over the whole body. Incurable.

3. *PITYRIASIS*.—*Syn.*, Dandruff. *S.*, Small white scales form, especially on the scalp, with some irritation of the skin and a great deal of itching.

4. *PSORIASIS*.—*C.*, Chronic eczema.

5. *LEPROSY*.—The Bible thus describes it: "A glossy, white, and spreading scale upon an elevated base; the elevation depressed in the middle, but without change of color, the black hair on the patches (which is the natural color of the hair in Palestine) participating in the whiteness, and the patches themselves perpetually widening their outline."

EPHELIS.—Sunburn, freckles, and yellowish-brown spots, called *chloasma*.

VITILIGO.—Literally, veal-skin; unnatural whiteness from deficiency of coloring matter of the skin. Occurs in patches. When universal it is *albinismus*.

HYPERTROPHIA.—Morbidly developed skin or tissues; connected with it are,—

1. *NÆVUS*.—Moles and mother-mark.

2. *VERRUCA*.—Warts.

3. *CLAVUS*.—Corns. To name these is sufficient.

TUBERCULOUS DISEASES OF THE SKIN are,—

ACNE.—*S.*, Inflammatory elevations around sebaceous follicles; when simple they are small, red elevations or tubercles, with black points, principally on the face; may become pustular and reach suppuration, or may grow somewhat larger and sore and painful, with a red circle around the tubercle (*acne rosacea*); finally discharge bloody pus.

MOLLUSCUM.—*S.*, A non-inflammatory, colorless, contagious tubercle, appearing on face and neck, growing slowly to about the size of a currant. They last from three to six months, and finally shrink away or inflame and slough off.

LUPUS.—*S.*, A small, soft, sore, slow tubercle, appears generally on the cheek, that scabs and ulcerates indefinitely, leaving a white, seam-like scar; may spread, widen and deepen, involving all the tissues, even the bones.

PURPURA.—*S.*, Round, red spots appear on the body, that gradually become dark or purple, and are caused by the extrava-

sation of blood into the skin ; they finally grow green and yellow, and disappear like a bruise. In severe cases there may be fatal hemorrhages from any of the mucous surfaces.

PRURIGO.—*S.*, Itching without eruption ; there may be sometimes a slight papular eruption accompanying it, but it is incidental and not peculiar to it. It may be general or local, and is named according to locality (as pruritus scroti, vulvæ, ani, etc.). The irritation and itching may be so severe as to be almost maddening, the patient rubbing and tearing the skin until mind and body are exhausted without relief.

PARASITES.—Only such diseases as are undoubtedly parasitic will be referred to.

SCABIES OR ITCH.—*V.*, While it is generally vesicular, it may be scaly, papular, or pustular ; *S.*, it usually manifests itself between the fingers on the back of the hand, sometimes on legs and arms, seldom on the face ; intense itching is constant, and the only comfort to the patient is to scratch. The animaleule is "flat-bellied, round-backed, tortoise-shaped, eight-legged."

ARMY ITCH.—A troublesome and contagious skin disease, begotten in the unavoidable filth of camp-life. A very slight pimply eruption, attended, however, by intense itching.

FAVUS.—*S.*, A scalp disease, which manifests itself in the formation of yellow cup-shaped crusts that may run together and form a general scab. It is evidently contagious, and when severe discharges very offensive matter.

SYCOSIS.—*Syn.*, Barber's itch. *S.*, Appearing only on the face, it presents slightly inflamed elevations about the roots of the hair, which on being cut off in shaving causes irritation, suppuration, and scabbing. The chin may become much swollen, and it may result in almost complete destruction of the beard.

TINEA CIRCINATUS.—*Syn.*, Ringworm, Scalled head. Its usually circular form gives it its name ; it occurs most frequently on head, face, and hands. *S.*, a thin powdery crust, with here and there a minute vesicle ; when on the head, results in the production of baldness in circular spots.

POISON-VINE ERUPTION.—*C.*, contact with the common poison-vine and several other plants; *S.*, vesicular eruption, generally on face and hands, attended with considerable inflammation, and sometimes febrile symptoms.

FROST-BITE, CHILBLAIN.—*D.*, An erythematous inflammation, caused by too suddenly warming feet or hands after being almost frozen. If actually frozen, extremities are liable to slough off.

BITES OF ANIMALS.—When a person is bitten by a venomous serpent, or by a rabid dog or other animal, the wound if accessible, should be at once sucked strongly with the mouth, to extract the poison. Then wash it thoroughly with hot water. Apply a cupping-glass for some minutes. Cauterize it with caustic potassa; or, if practicable, excise the part bitten. Aqua ammoniæ is useful also as a local antidote for snake-poison, and for that of venomous insects; and so is fluid extract of serpentaria.

MARSHALL HALL'S READY METHOD IN ASPHYXIA.

1. Treat the patient *instantly on the spot*, in the *open air*, freely exposing the face, neck, and chest to the breeze, except in severe weather.

2. In order to *clear the throat*, place the patient gently on the face, with one wrist under the forehead, that all fluid, and the tongue itself may fall forward, and leave the entrance into the windpipe free.

3. To *excite respiration*, turn the patient slightly on his side, and apply some irritating or stimulating agent to the nostrils, as *Veratrine*, *dilute Ammonia*, etc.

4. Make the face warm by brisk friction: then dash cold water upon it.

5. If not successful, lose no time; but, to *imitate respiration*, place the patient on his face, and turn the body gently, but completely *on the side, and a little beyond*; then again on the face, and so on, alternately. Repeat these movements deliberately and perseveringly *fifteen times only* in a minute.

(When the patient lies on the thorax, this cavity is *compressed* by the weight of the body, and expiration takes place. When he is turned on the side, this pressure is removed and inspiration occurs.)

6. When the prone position is resumed, make a uniform and efficient pressure *along the spine*, removing the pressure immediately, before rotation on the side. (The pressure augments the expiration ; the rotation commences inspiration.) Continue these measures.

7. Rub the limbs *upward*, with *firm pressure* and with *energy* (the effect being to aid the return of venous blood to the heart).

8. Substitute for the patient's wet clothing, if possible, such other covering as can be instantly procured, each bystander supplying a coat or cloak, etc. Meantime, and from time to time, to *excite inspiration*, let the surface of the body be *slapped* briskly with the hand.

9. Rub the body briskly till it is dry and warm, then dash *cold* water upon it, and repeat the rubbing.

Avoid the immediate removal of the patient, as it involves a *dangerous loss of time*,—also the use of bellows, or any *forcing* instrument, also, the *warm bath*, and all *rough treatment*.

POISONS AND THEIR ANTIDOTES.

POISONS.

ANTIDOTES.

Acids.

The Alkalies. Common soap (soft or hard), in solution, is an efficient remedy, and has the advantage of being always at hand. It should be followed by copious draughts of tepid water or flaxseed tea. For *nitric* and *oxalic* acids, the carbonates of magnesia and lime (chalk and water) are the best antidotes. When sulphuric acid has been taken, the use of much water is improper.

Alkalies and their salts.

The Vegetable Acids. Common vinegar being always at hand, is most frequently used. The fixed oils, as castor, flaxseed, almond, and olive oils, form soap with the alkalies, and thus also destroy their caustic effect. They should be given in *large quantity*.

Baryta and its salts. Lime.

Epsom or *Glauber's Salt*, in solution, or diluted sulphuric acid. The fixed oils also have the same effect as with the alkalies proper, when these bases are uncombined.

Iodine. Iodide of Potassium.

Starch, wheat flour, or arrow-root, in large quantities, well mixed with water. Let the patient drink *freely* of starch, or wheat flour and water, and afterwards of a strong mixture of vinegar and water (any acid in which there is oxygen); when this is done, the whole process of saving the patient's life is accomplished, and it will only be necessary to evacuate the bowels.

Cyanide of Potassium and Prussic Acid.

Chlorine water; solution of chlorinated soda; aqua ammonia; cold affusion.

Antimony and its salts.

Astringent infusions, as of galls, oak bark, Peruvian bark, or green tea very strong.

Arsenic and its compounds.

Any oil or fat (sweet oil, butter, milk); magnesia in large quantity; hydrated oxide of iron (recently made), in table-spoonful doses, every 5 or 10 minutes.

Bismuth and its compounds.

Albumen. Copious draughts of milk, with sweet mucilaginous drinks.

Copper and its compounds.

Albumen, as milk or white of egg in solution, should be freely administered. Ferrocyanuret of potassium (freely). *Vinegar must be avoided.*

Gold, salts of.

Sulphate of iron, with a free use of mucilaginous drinks.

Iron, salts of.

Carbonate of soda, with mucilaginous drinks.

Lead, salts of.

Albumen; sulphate of magnesia (*Epsom salts*); sulphate of soda (*Glauber's salt*); diluted sulphuric acid; lemonade; opium.

Mercury, salts of.

Albumen, as white of egg, milk, or wheat flour beaten up with water; to be followed by an emetic.

Silver, salts of.

Common salt, freely, in solution.

POISONS.	ANTIDOTES.
<i>Tin, salts of.</i>	Albumen; white of egg; milk; or flour.
<i>Zinc, salts of.</i>	Albumen, or carbonate of soda, with copious draughts of warm water, and especially milk.
<i>Phosphorus.</i>	Magnesia, with water and copious draughts of mucilaginous drinks.
<i>Gases.</i>	Ammonia, cautiously inhaled, is recommended for chlorine. Asphyxia, produced by noxious gases, must be treated by copious cold affusions, especially to the head; blood-letting; artificial respiration; and stimulants carefully administered.
<i>Creasote.</i>	Albumen, or white of egg; milk; or wheat flour.
<i>Alcohol or spirituous liquors.</i>	A powerful emetic should be given, followed by copious draughts of warm water. Congestion of the brain, and other symptoms, are to be treated on general principles.
<i>Opium and other narcotics.</i>	The chief reliance is to be placed on the most active emetics (as mustard, alum, tartar emetic, or sulphate of zinc) and the stomach-pump. Emetics are preferable to the stomach-pump, when the narcotic has been taken in substance. The patient should be kept in motion, and cold water dashed on the head and shoulders. Should the above means fail, the electro-magnetic battery, or if that cannot be obtained, artificial respiration must be resorted to.
<i>Strychnia.</i>	Emetics should be freely given. Kermes mineral; tannic acid; tincture of iodine; chlorine water; ether or chloroform, by inhalation. If these means fail, Dr. Marshall Hall's ready method may be tried.
<i>Arnica.</i>	Vinegar.
<i>Aconite.</i>	Stimulants, externally and internally.
<i>Veratrum Viride.</i>	Laudanum; alcohol.

TO MAKE HYDRATED OXIDE OF IRON.

"Take of Solution of Tersulphate of Iron, a pint; Water of Ammonia, Water, each, a sufficient quantity. To the solution of Tersulphate of Iron, previously mixed with three pints of Water, add Water of Ammonia with constant stirring, until in slight excess. Then pour the whole on a wet muslin strainer, wash the precipitate with water, pressing the strainer forcibly with the hands until no more liquid passes. Lastly, mix the precipitate with sufficient Water to bring the mixture to the measure of a pint and a half, and transfer it to a wide-mouthed bottle, which must be well stopped."—U. S. P.

DIETETICS FOR THE SICK.

TOAST-WATER.—Toast bread crust to a light brown on both sides; plunge into cold water. Keep cool.

BARLEY-WATER.—Cleanse some pearl barley thoroughly; add to it a little sugar and slice of lemon; pour over them some boiling water, and put in a covered vessel to cool.

BARLEY GRUEL.—Boil two ounces of pearl barley in half-pint of water ten minutes; pour off this water; then add three and a half pints boiling water, and reduce to half the quantity; then strain.

OATMEAL GRUEL.—Mix two tablespoonfuls of oatmeal with a little water; add gradually, while stirring, three-fourths of a pint of water or milk; add a little lemon-peel and mace; stir it on the fire for fifteen minutes, then strain, and sweeten to taste.

GROUND RICE MILK.—Boil together two tablespoonfuls ground rice with a pint of milk for half an hour; add a little lemon-juice, and sweeten to taste.

BREAD JELLY.—Toast a thin slice of bread, or a roll sliced thin, to a pale brown on both sides. Put it in a quart of water, and let it simmer over the fire until it has become a jelly; then strain through a thin cloth, and add lemon-juice and sugar to taste.

ICELAND MOSS.—Wash and bruise an ounce of the moss, and soak overnight; then add a quart of water, and boil it to one-half; strain through a sieve. To be taken with milk or flavored to taste.

APPLE TAPIOCA.—Pare, core, and quarter eight apples. Soak half a spoonful of tapioca overnight; then add to it a half tea-cupful of white sugar and a little lemon-peel, and simmer ten minutes; then put in the apples and stew ten minutes more.

TAPIOCA JELLY.—Soak four tablespoonfuls of tapioca overnight; mix with a pint of boiling water; simmer gently over a fire; when thick and clear add two tablespoonfuls of sugar, half tablespoonful of lemon-juice; turn into cups.

MEAT JELLY.—Take half-pound each of mutton, beef, veal,

or pork, and a small slice of bacon ; add water enough to keep from burning ; then let simmer in a covered vessel three or four hours, and strain.

TO MAKE ARROW-ROOT.—Put a teaspoonful of arrow-root in a basin, and rub very smooth with a little cold water ; then pour over it, stirring it all the time, a half-pint of boiling water or milk ; boil two or three minutes.

APPLE-WATER.—Slice two large apples into a jar with cover, and add a pint of boiling water ; cover close for an hour ; then pour off the fluid, and sweeten.

APPLE-TEA.—Roast apples, and cover them with boiling water ; sweeten with sugar ; let stand an hour.

BROTH FROM FOWLS.—Take an old fowl, stew it to pieces with a couple of onions, season lightly, skim and strain it.

CHICKEN BROTH.—Cut up a young fowl, and stew with three pints pure water ; skim well, and add a little salt ; take two tablespoonfuls of pearl barley, wash it thoroughly, and add to the broth, also an ounce of marsh-mallow roots cut into shreds ; then boil an hour, and strain.

MUTTON BROTH.—Take one pound of serag mutton, simmer gently with two pints of water and a little salt ; strain through a sieve ; when cold remove all the fat.

A STRONG BROTH.—One pound each of beef, veal, and serag end of neck of mutton, a little salt, three quarts of water, a few whole peppers ; reduce to a quart.

NOURISHING SOUP.—Boil two pounds of lean beef or veal with a quarter of a pound of pearl barley, a little fresh eelery, with a little salt in a quart of water slowly, until it becomes the consisteney of cream ; strain through a fine hair sieve.

RECIPE FOR BEEF-TEA.—Mince finely one pound of lean beef ; put in a glass or earthen vessel, and pour upon it a pint of cold water ; allow it to stand for half an hour ; next place the vessel in a saucepan of water over a fire (if the vessel is glass, water must be cold), and let the water boil gently for an hour ; strain through a coarse cloth. Sediment that strains through nutritive and to be used.

ANNOUNCEMENT.

ELECTRO-THERAPY is the application of electricity to the treatment of disease. Metallo-therapy is the application of metals to that purpose, different metals having different properties. In electro-metallo-therapy we pass the electric current through different metals, and endeavor to obtain the good effects of both plans. On this theory the helices of my batteries are constructed and patented; and, being made of a combination of wires, varying in lengths and diameters, and of distinct and separate metals, will, by combining different coils into one or more circuits, produce different thermal results. Each graduation will therefore elicit its own definite physiological affinities.

Great experience in the use of these metals has enabled me to determine the exact proportions from which can be produced the best results in the cure of disease; and in the several grades of batteries of my own invention the coils and helices of copper, iron, brass, and silver are arranged for the most effective use.

To meet the wants in a variety of conditions, I have also, after many practical experiments, prepared and patented a combination of metals, which, when properly proportioned and combined, and formed into magnets, produce a silent current of electricity when acted upon by the moisture and heat of the body. These magnets, being made neatly, of light, durable material, and embedded in appliances such as chest or lung protectors, shoulder-braces, abdominal supporters, pads for the liver and stomach, electric

belts for the spine and kidneys, insoles for the shoes, etc., have done excellent relief-rendering service.

The ELECTRIC CHEST-PROTECTOR is made to cover the lungs, both in front and back, and is far superior to anything else in use for this purpose; prevents consumption, cold, etc.

The ELECTRIC SHOULDER-BRACE is worn upon the back, and is adjustable to the size of the person.

The ELECTRIC ABDOMINAL SUPPORTER is neatly made, very light, easily adjusted, and of great comfort and use to the wearer.

The ELECTRIC BELT is of great service and comfort to men, women, and youth who have much walking, standing, or lifting to do, as well as a sure cure for most *Kidney Diseases* and pains in the back.

The ELECTRIC LIVER-PAD, for morbid liver and indigestion, has no equal.

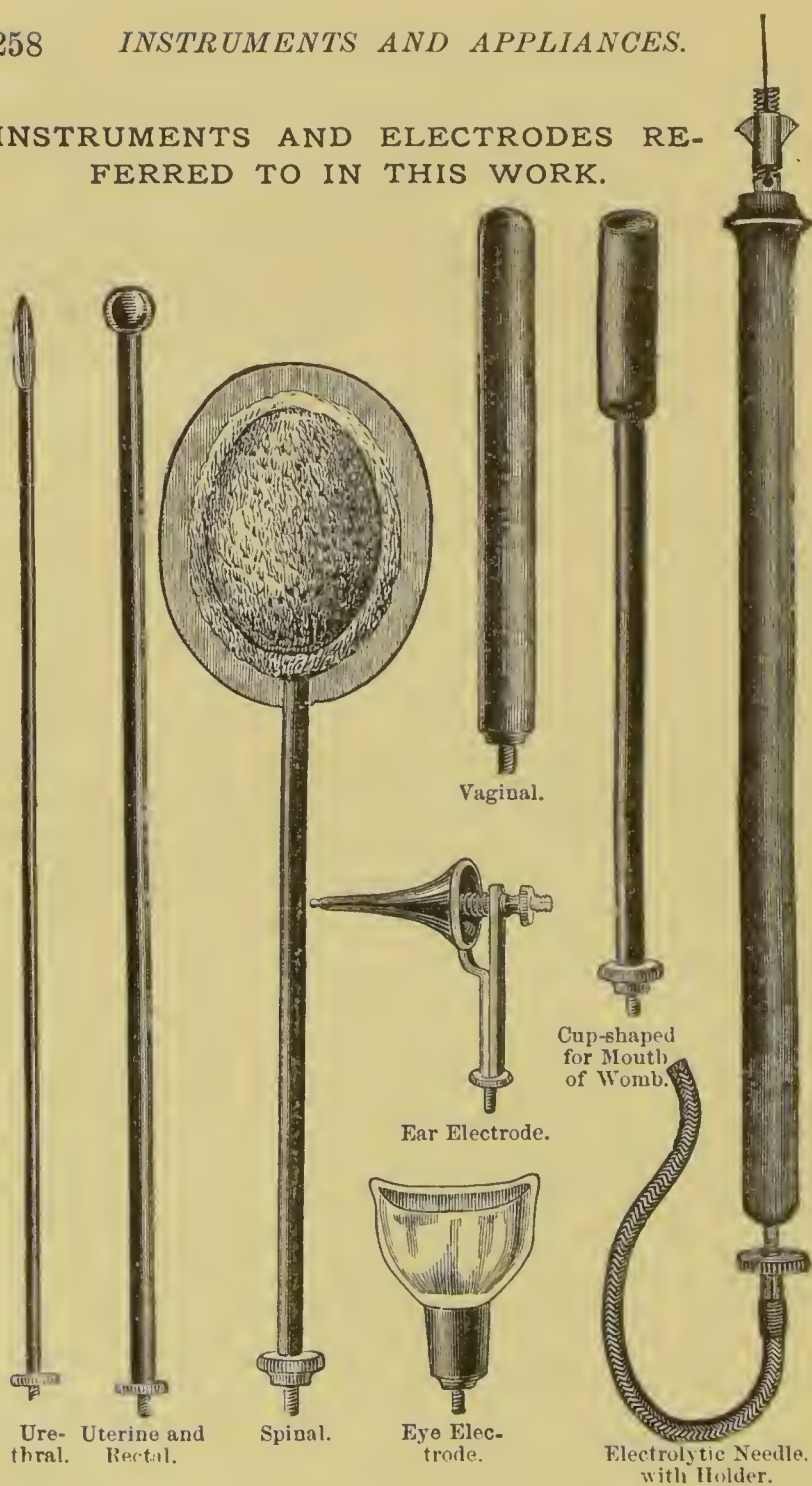
The ELECTRIC INSOLES are worn in the boots or shoes, the electric magnets next the feet, outside the stockings. When the circulation is very sluggish, they may be worn inside the stockings for a time. To insure perfect and continuous action, all persons using them should have two pairs, changing every week or fortnight so as to prevent the demagnetizing. By thus alternating you always secure an electric action.

Thousands of testimonials to the value of these *Electric Appliances* are in my possession; but the very best estimate of their value will be to those who may be induced to use them.

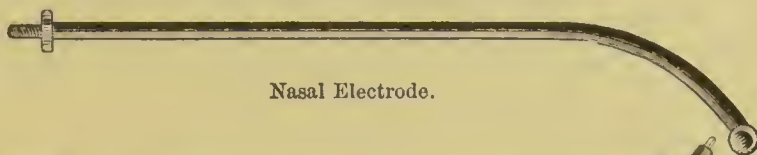
DR. ELIZABETH J. FRENCH,
Care of OTTO FLEMMING,
1009 Arch Street.

PHILADELPHIA, PA., 1885.

INSTRUMENTS AND ELECTRODES REFERRED TO IN THIS WORK.



INSTRUMENTS AND ELECTRODES REFERRED
TO IN THIS WORK.



Nasal Electrode.



Laryngeal Electrode.



Interrupting Handle.



For Special Nerves.



Wire-Brush
Electrode.



Large Sponge-Holder.



Spatula or
Tongue Elec-
trode.



Side Sponge-Cup.



Sympathetic
Nerve.

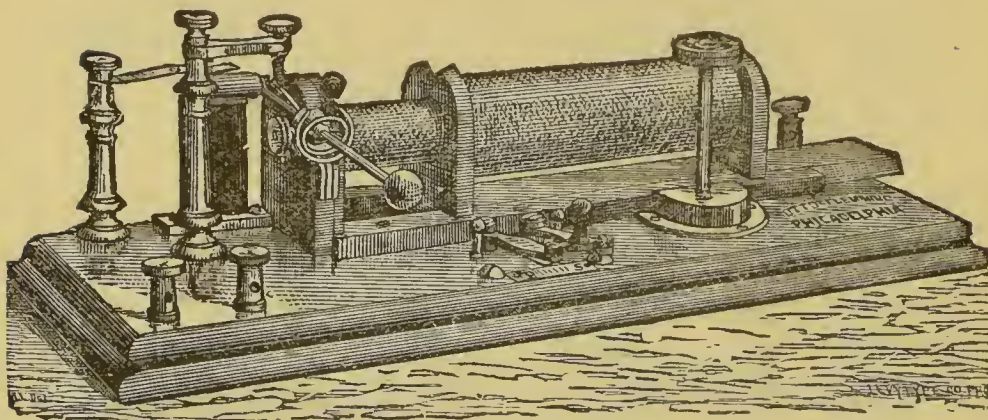


Disks, Olives, Points, etc.

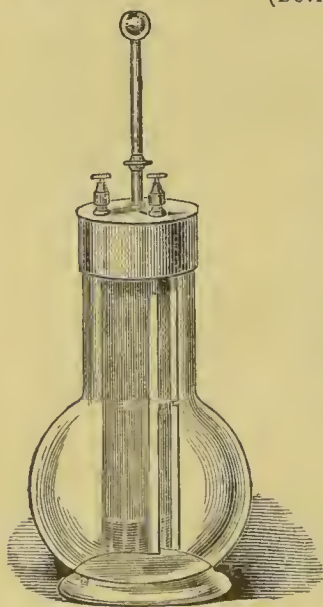


Carbon
Electrode.

DUBOIS-RAYMOND COIL, WITH DR. E. J. FRENCH'S PATENTED
HELIX COMBINATIONS FOR OFFICE USE.



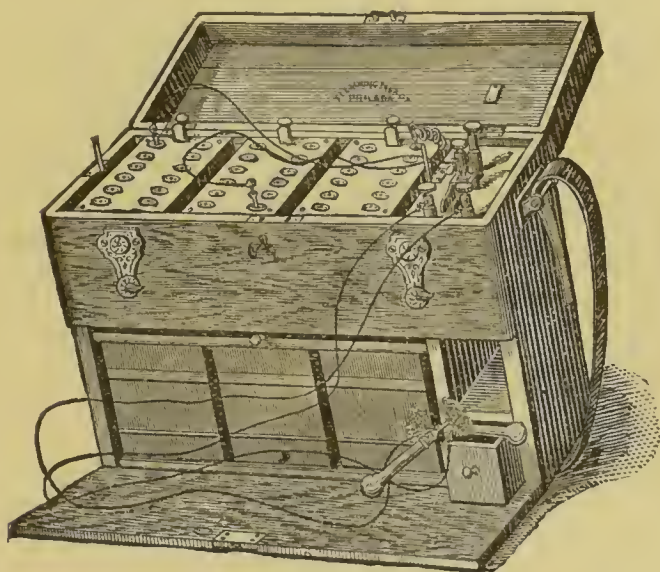
(Devised by Otto Flemming.)



GRENET CELL.

This coil is provided with rapid and slow rheotomes or interrupters, with switch for circuiting the different helix-sections, and with governing screw for regulating the tension of currents; its motive-power is derived, generally, from a Grenet Cell. The platform measures $5\frac{1}{2}$ by 15 inches, of polished walnut, with all metallie parts finely nickel-plated, and the whole presents a highly elegant and convenient instrument for office use.

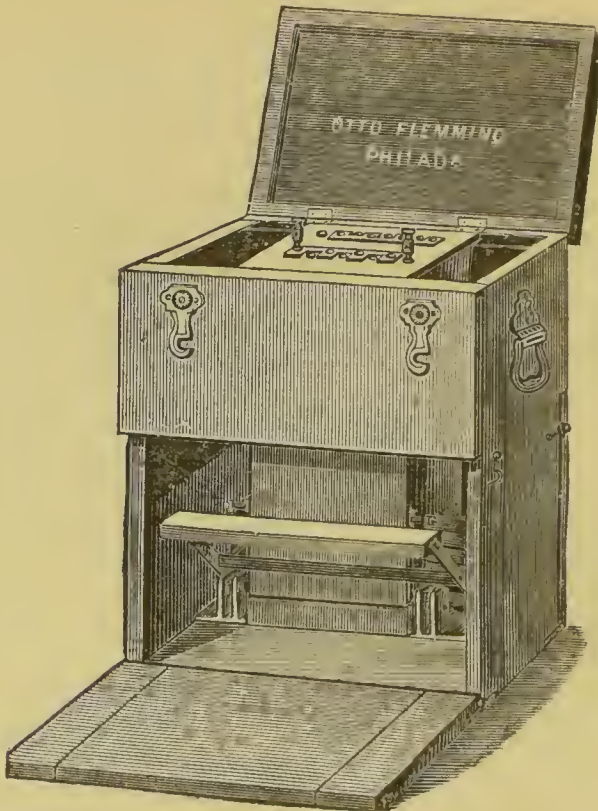
THIRTY-CELL PORTABLE CONTINUOUS GALVANIC CURRENT BATTERY.



(Devised by Otto Flemming)

This form of Galvanic Battery is now acknowledged to be the most perfect ever manufactured, overcoming all the objections that have heretofore been so justly urged against all the older forms. The different sizes of these batteries—ranging from 10 to 30 cells—are so made in sections of 10 cells each that any one section, or any number of cells, can be used independently of the others, or all conjointly. A recent invention to be used in connection with—from 10 to 15 cells of—this battery is the Electrolytic Needle with its holder, for removing superfluous hair from ladies' faces, as shown in cut on page 258.

FLEMMING'S SINGLE-CELL GALVANO-CAUTERY BATTERY
FOR MINOR SURGERY.



(Patented June 23, 1885.)

This Cautery Battery may be furnished as a single-cell cautery for minor operations in the nose or throat, or as a compound battery to answer as a cautery, and by converting a commutator, as a 10-cell continuous galvanic battery. On the same principle Fleming's Double-Cell Cautery Battery is manufactured, producing a double amount of heat, which may be converted into a 20-cell continuous galvanic battery.



ELECTRO-MAGNETIC
BELTS, ABDOMINAL SUPPORTERS,
CHEST-PROTECTORS, INSOLES,
AND
OTHER APPLIANCES FOR THE HUMAN BODY,

INVENTED BY

Dr. Elizabeth J. French,
OF PHILADELPHIA, PA.

This invention—the form and combination of metal magnets—is peculiarly adapted to various appliances to be worn on the human body, and for insoles, generating a silent, but constant, current of electricity, stimulating and equalizing the circulation, removing and preventing

WEAKNESS, DEBILITY, PROLAPSUS, COUGHS, COLDS,
DYSPEPSIA, RHEUMATISM, CRAMPS, COLD
FEET, AND SIMILAR COMPLAINTS.

The INSOLES are but one-sixteenth of an inch in thickness, to be worn in the boots or shoes, and are invaluable to old or young, weak or strong. They are inexpensive, very effective, and WILL CURE COLD FEET. As an experiment, they cost but FIFTY CENTS a pair; as an investment, they have no equal. They return the purchaser manifold in comfort and saving of doctor's bills, and the expense and inconvenience of disagreeable drugs.

The ELECTRO-MAGNETIC CHEST-PROTECTOR not only supplies the place of all other chest-protectors, as a covering for the lungs, but imparts a magnetic warmth to the entire throat, lungs, and stomach.

These ELECTRO-MAGNETIC APPLIANCES should usually be worn over one or more of the undergarments, especially in persons of a weak and sensitive organism, the electric current generated by the heat and moisture being, in many cases, too powerful when worn next to the body.

These goods are the *best*, being lighter, neater, more serviceable, and therefore cheaper than any others in the market.

A LIBERAL DISCOUNT TO AGENTS.

Address all communications to

ELIZABETH J. FRENCH,

Or her authorized agent,

OTTO FLEMMING,

1009 Arch Street, Philadelphia, Pa.

PRICE-LIST

OF

ELIZABETH J. FRENCH'S

PATENTED COMBINATION BATTERIES, ELECTRODES, AND ELECTRO-MAGNETIC APPLIANCES FOR THE HUMAN BODY.

No. 1 Combination Battery, Complete	\$25.00
“ 2 “ “ “	35.00
“ 3 “ “ “	40.00
“ 4 “ “ with SILVER HELIX	55.00
“ 1 Set, Six Combination Electrodes	6.00
“ 2 “ Seven “ “	8.00
“ 3 “ Eight “ “	10.00

APPLIANCES FOR THE HUMAN BODY CONTAINING THE PATENTED COMBINATION METAL MAGNETS.

Abdominal Supporters	\$8.00
Belts	5.00
Liver-Pads	3.00
Brace for the Shoulders and Back. No. 1	8.00
“ “ “ “ “ “ 2	9.00
“ “ “ “ “ “ 3	10.00
Chest-Protector	2.00
Insoles50
Electric Complexion Powder. Per box50
“ Hair Tonic. Per bottle75
Cocoanut Oil. Per bottle	1.00

A LIBERAL DISCOUNT TO AGENTS.

FOR SALE BY

ELIZABETH J. FRENCH,

Or her manufacturer and authorized agent,

OTTO FLEMMING,

1009 Arch Street, Philadelphia.

ELECTRIC BAKING POWDER.

WARRANTED THE MOST PERFECTLY PURE
CHEMICAL COMPOUND EVER OF-
FERED TO THE PUBLIC.

The inventor of the **Electric Baking Powder**, **Dr. ELIZABETH J. FRENCH**, having for years made the **SCIENCE** of **COOKING** a **practical study**, has after a series of experiments, in which some of the **most eminent chemists** in America have assisted, succeeded in producing a Baking Powder not only **harmless** but **beneficial** to the **human system** and which **restores** to the flour the **phosphates** lost in grinding.

The combination is so exactly proportioned that in the rising process each ingredient is so far neutralized by the other that **not a trace** of the compound **remains** after baking, in the delicious Bread, Biscuits, Rolls, Muffins, Waffles, Buckwheat and Griddle Cakes, Fritters, Potpies, Dumplings, Puddings, Sweet Cakes, and all varieties of Pastry; and the **nutrition** and **sweetness** of the flour is **preserved**, without alkaline taste or odor.

IT IS ANTI-DYSPEPTIC.

It is **infallible**, convenient, wholesome, and invaluable to the **economical** housewife, as it requires but **one quarter** the shortening, and but **one half** the eggs used in any other mode of cooking. The receipts on the labels are all from practical tests. The Electric Baking Powder will **not lose** its virtues by age or in any climate. After fifteen years of **CONSTANTLY INCREASING DEMAND** we unhesitatingly pronounce it the **BEST**.

All our agents are instructed to **return the money** in any case the Powder does not **prove** all we claim for it.

ELECTRIC BAKING POWDER COMPANY,
PHILADELPHIA,
Pa.

New Path in Electro-Therapeutics.

BY ELIZABETH J. FRENCH,

*Author of a complete manual of "Electro-Therapeutics," "Alcohol, an Enemy,"
"Family Guide," etc.*

OPINIONS OF THE PRESS.

"A very neat little volume, entitled a 'New Path in Electrical Therapeutics,' by Elizabeth J. French, and handsomely printed and published by J. B. Lippincott Company, Philadelphia. Its object is to describe and vindicate Mrs. French's great discovery of electrical cranial diagnosis, and a scientific application of nine different currents of electricity to the cure of disease. The style is clear, concise, and easy, showing that the heart of the authoress is in the subject, and the authorities cited in support of her position are respectable and numerous."—*The Press, Philadelphia*.

"The book is written in an easy, graceful style, and contains much of historical and scientific information upon the subject of Therapeutics. It is also valuable as a curiosity of scientific investigation."—*The Commonwealth, Boston*.

"The work is written in an easy and comprehensive style, and is really curious and interesting."—*Philadelphia Inquirer*.

"The author evidently has a very clear idea of her subject, and though her theory is rather astounding, still, being supported by such an eminent authority as Dr. Ferrier, and by a successful practice in cases described in the volume before us, can hardly fail to attract attention from the best scientific minds."—*The Times and Messenger, New York*.

"The work is void of technicalities, and gives a very lucid review of Anatomy, Hygiene, and Historical Medicine."—*The Ohio Democrat*.

"The book contains a vast amount of very useful information on the subject of health, and should be read by all, and have a place in every family library."—*Temperance Blessing, Philadelphia*.

"Dr. Ferrier, the London scientist, is somewhat late in making public his supposition that 'disease is mapped out on the brain, and may be diagnosed.' In a recent work on Electrical Therapeutics, by Elizabeth J. French, the scientific application of electricity reveals a new and wonderful phase in anthropology. 'It is many years since I discovered the human brain is a chart upon which may be found delineated all the organs of the human body, and a record of their exact conditions.' Our American lady should be sustained, and the laurels should be hers."—*Fort Wayne Sentinel*.

"Those who sneer at the idea of cranial diagnosis, as developed by Mrs. French, may perhaps have more faith in it, now that it has been adopted, not discovered, by a great English scientist."—*Sunday Republic, Philadelphia*.

"In this startling treatise the lady proclaims that not only has she practised, but that she teaches, the science of diagnosing disease through the brain. The lady's claims are no bolder than she seems prepared to substantiate; and just now comes the announcement that Dr. Ferrier, of King's College, London, England, is about to make public his experiments on the same subject. The lady has won the emoluments of fame by her early penetration, and whilst Dr. Ferrier stands at the portal of discovery, Dr. French has almost perfected a grand science. If this be charlatanism and humbuggery, let us seek to expose it by stern and rigorous investigation, but until then let her who has won wear the laurels."—*Garrett County Gazette, Maryland*.

"Professor French in her new work gives a very full account of her great discovery respecting electrical cranial diagnosis and the scientific application of nine different currents of electricity to the cure of disease. It gives a thorough system of hygiene, and one of the most consistent we ever read. However much may be said against her electrical panacea as an hallucination or otherwise, she has wrought wonderful cures in chronic and physician-abandoned cases. Happily, there is no check of potency to the progress of science."—*Ohio Farmer*.

